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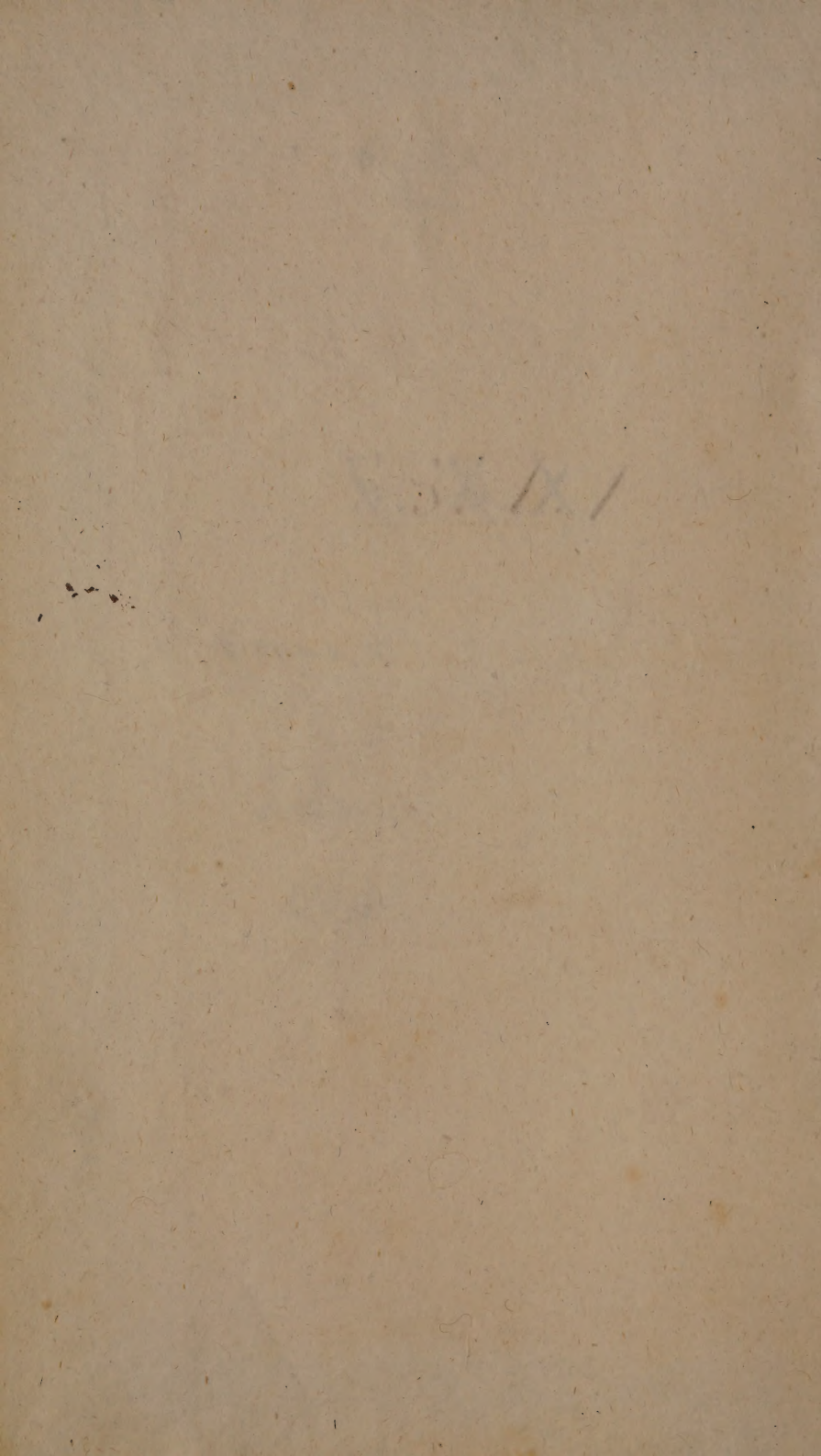


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TWO CASES

DEBATE MELITUS

1811





AN ACCOUNT OF  
**TWO CASES**  
OF THE  
**DIABETES MELLITUS;**  
WITH REMARKS,  
*Ec. Ec.*

AN ACCOUNT OF  
TWO CASES  
OF THE  
DIABETES MELLITUS;  
WITH REMARKS  
ON THE

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OF THE  
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WITH REMARKS,  
AS THEY AROSE DURING THE  
PROGRESS OF THE CURE.

To which are added,  
A GENERAL VIEW OF  
**THE NATURE OF THE DISEASE**  
AND ITS APPROPRIATE TREATMENT,

Including Observations on some Diseases depending on  
STOMACH AFFECTION;

AND A DETAIL OF  
**THE COMMUNICATIONS**  
Received on the Subject since the Dispersion of the Notes on the  
FIRST CASE.

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BY JOHN ROLLO, M.D.  
SURGEON-GENERAL, ROYAL ARTILLERY.

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WITH  
THE RESULTS OF THE TRIALS OF  
**VARIOUS ACIDS AND OTHER SUBSTANCES**  
In the Treatment of the Lues Venerea;  
AND  
SOME OBSERVATIONS ON THE NATURE OF SUGAR, &c.  
BY WILLIAM CRUICKSHANK,  
Chemist to the Ordnance, and a Surgeon of Artillery.

—\*—  
IN TWO VOLUMES.  
VOL. I.

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London:  
PRINTED BY T. GILLET,  
FOR C. DILLY, IN THE POULTRY.

MDCCKCVII.

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## P R E F A C E.

IN the year 1777, about the months of May or June, so far as can be recollected, I saw a case of the Diabetes Mellitus in a weaver at Edinburgh. He had been at least four months in the Royal Infirmary without having derived any advantage, and was chiefly under the care of the late Dr. Hope, Professor of Botany. When the patient was discharged, a Mr. Johnstone, then a Student of Physic, and friend of mine, but since dead, and myself, detained him a few days and paid

his expences, in order to bleed him, and obtain some of his urine, so as to ascertain the appearances and spontaneous changes. I well remember that the blood and urine exhibited the appearances as described by Dr. Dobson; but the papers, and a portion of the saccharine extract I had preserved, and which I carried with me abroad, were lost in the hurricane at Barbadoes in 1780.

From that period I had not met with a case of Diabetes, although I had observed an extensive range of disease in America, the West Indies, and in England, until the year 1796.

Captain



Captain Meredith, of the Royal Artillery, being an acquaintance, I had, from my situation, seen him very frequently, previous to his going on camp duty in 1794, but then he had no disease; however, he always had impressed me, from his being a large corpulent person, with the idea that he was not unlikely to fall into disease.

On the 12th of June, 1796, he visited me, and though I was at once struck with the diminution of his size, yet at the same time the colour of his face being ruddy, I received no impression, otherwise than of his being in health: a moment's con-

versation convinced me of the contrary. He assured me he was very ill, that he had been advised to a change of situation, and had come to consult me, to arrange his affairs, and then to return to his family at Yarmouth, where he expected to remain for some time on duty.

He complained of great thirst and a keenness of appetite; his skin was hot, dry and parched; pulse small and quick. He told me his complaints had been attributed to an old disease, and a liver affection. The thirst, dry skin, and quick pulse, marking a febrile state, depending probably on some local circumstance,

and



and connecting these with the keenness of appetite, Diabetes immediately suggested itself to me; and I enquired into the state of his urine, which I found in quantity and colour to be characteristic of the disease. I was at the same time much surprised, that for the two or three months he had been under the care of a Physician and Surgeon, the circumstance of increased urine had not been known to them. The patient told me, as he drank so much, the quantity of urine had appeared to him a necessary consequence of it, and of course never having been asked about it, he had not mentioned it. I directed him to keep  
the

the urine he next passed, which, on examination, was found to be sweet, in consequence of which the disease became sufficiently ascertained.

I dissuaded him from renting his house and selling his furniture; and in the most guarded, though effectual manner, told him, that his disease would prove a tedious one, and as its nature was not well understood, he might be inclined to return and obtain other opinions; and as Woolwich was so near London, the seat of the first medical intelligence, he would prefer returning should the disease not be removed; and I promised to assist him in  
every

every satisfaction he might desire with regard to further advice.

I wrote by him to his Physician; we from time to time corresponded, in the course of which I told him I had formed a peculiar opinion of the disease; but previous to my communicating it, I requested him to take some blood from our patient, in order to ascertain its sensible properties and observe its spontaneous changes. I did this with the view of determining a material point towards explaining the nature of the disease. For the case I had seen at Edinburgh, and Dobson's account, with Dr. Cullen's opinion, had



had prepossessed me with the idea of the disease being a primary affection of some peculiar kind of the stomach. In a medical party in London, I mentioned this case and my views so far of it; when a very ingenious anatomist and physiologist declared he had seen some cases of the disease in a public hospital in town; and in two or three of them which were bled, the blood was not found to have saccharine properties, and on the whole he was of opinion the disease was a primary affection of the kidneys.

Our patient was not bled. As he was getting worse about the end  
of

of November, an application was made for his return; and he arrived at Woolwich, as the Case states, on the 16th of October.

I now refer to the Case, printed notes of which were dispersed in January last, to every person in England or Scotland, I thought likely to meet with the disease; and I solicited a trial of the mode of cure, with an account of the results. Those notes comprehended the first Case so far as it then had proceeded. For the results of the trials of others I should have waited, had I not so immediately met with another case of the disease, and which having  
proved

proved conclusive, though not so entirely satisfactory as it might have turned out, had our patient been possessed of more steadiness: the importance of the subject has urged me to publish it without further delay, and at the same time to extend the account of the former case to the present period. However, we shall not be precluded from repeating the publication, with any additional cases of our own, or those of others with which we may be favoured.

To the account of the Cases, we intend to subjoin a general view of the nature and treatment of the Diabetes Mellitus, including some observations



observations on other diseases connected with stomach affection; a brief narrative of what has been hitherto advanced on the subject; and a detail of any communications transmitted to us since the dispersion of our notes; with a relation of some experiments on the nature of sugar, by Mr. Cruickshank. The whole forming a tolerable description of the new and old doctrines respecting the disease.

I have much satisfaction in acknowledging here the obligations I am under to my friend MR. CRUICKSHANK, (*Chemist to the Ordnance, and a Surgeon of Artillery*) who  
readily

readily entered into my views of the nature and treatment of the disease, and has greatly assisted me in the prosecution of the subject by his medical opinion, exclusive of the important advantages it has derived from his valuable and accurate experimental investigations.

ROYAL ARTILLERY HOSPITAL,

*Woolwich, March 25, 1797.*

AN ACCOUNT OF  
TWO CASES  
OF THE  
*DIABETES MELLITUS*;  
WITH REMARKS,

*As they arose during the Progress of the Cure.*

CASE I.

ON the 16th October, 1796, CAPTAIN MEREDITH, of the *Royal Artillery*, was examined, and the following history comprehends the present state of his disease, and a retrospect of its origin and progress.

*Present State of the Disease.*

He voids about twelve quarts of urine in twenty-four hours; since last night has preserved seven quart bottles, being the quantity made; it is of a light straw colour, has no smell of urine, but has a whey and violet flavour, and its taste is very sweet.

B

His



His thirst is excessive, and he drinks during the day seven or eight quarts, and even upwards; the tongue is whitish and moist; there is a clamminess in the mouth, and he spits a white frothy saliva of a sweetish taste. His appetite for food is variable, sometimes unusually keen, and at odd times, as in the night.

His skin is dry, but not unusually warm; pulse rather weak, and not exceeding 84. His face flushed.

He is frequently sick, and throws up matter of a viscid nature, and of a bitterish and sweetish taste. After eating he has a pain of his stomach, which continues often half an hour.

He has a constant pain in the region of both kidneys, extending forwards, but more particularly in the right, in which there seems to be a greater fullness and tenderness to the touch; there is likewise a retraction of the testicle, with a weakness, sense

sense of coldness, and at night an œdematous swelling of the leg on the same side; he also complains of a pain and tenderness of the great toe. He feels a singular, painful and fluttering sensation in his belly, extending from the situation of his kidneys.

He is regular in his bowels, though sometimes inclining to costiveness; his stools are of a greenish colour, and have no unpleasant smell.

The prepuce of the penis does not retract; it has a whitish appearance, with excoriation and soreness, but is not swelled.

The gums are reddish, and have the appearance as influenced by mercury, the teeth feel loose to him, and as on edge, or the sensation from sharp acids, and they are peculiarly white; he has lost two of them. There is a fullness about the eyes, with a turbid yellowish cast. He has slight and occasional head-achs.

His diet is animal food and vegetables; he has not been particularly restricted; he drinks from a pint to a bottle of port wine daily—other drink, toast and water. He uses horse and walking exercise, but cannot walk two miles without much fatigue.

Mr. *Cruickshank* took 36 ounces troy weight of urine voided to-day, and it yielded by evaporation three ounces and one drachm of saccharine extract, of the appearance of molasses but thicker, having nearly the consistence of wax, and like it tenacious. If, therefore, the whole of the day's urine had been evaporated, it would have yielded about 29 ounces troy weight, an astonishing quantity to be formed and separated daily from the system. By standing in the air it became moist, and of nearly the consistence, smell and appearance of treacle.

Treating some of this extract with the nitrous acid, he procured the saccharine or oxalic acid, and with a smaller proportion  
of



of the acid it produced a substance, which in appearance, taste and smell could not be distinguished from honey.

The urine, in appearance, taste, and spontaneous changes, and the result obtained by evaporation, may be considered as similar to what has been observed by Dobson and others, though there was less sugar and more animal mucilage than in the diabetic urine of the former.

Two portions of blood, of about four ounces each, were taken by Dr. *Wittman*, (who, as *Surgeon of the Battalion* the *Officer* belonged to, attended at my request to superintend the execution of the plan of treatment, which he has done with attention) on the 18th of October, from the same vein, and at the same time: on standing in the inside of a window fronting the north, (the thermometer of Fahr. in the air being 55) the appearances resembled exactly those described by Dobson, except that the serum did not impart a sensibly

sweet taste ; to me it tasted as whey with a greater than necessary proportion of rennet. The crassamentum of the first cup had a slight buff, rather less serum than natural, and which was opaquely whitish; the crassamentum of the second cup had more of the buffy coat. The buffy coat in both cups was of a bluish colour, similar to what mercury sometimes produces.

On the same day a portion of healthy blood was taken and placed under the same circumstances of temperature, &c. and in the same room with one of the portions of diabetic blood.

In two days the diabetic blood assumed a caseous appearance on the surface, which disappeared with the evaporation of the serum, and the whole mass became dry and resinous in appearance, without having undergone (unless the throwing out a slight animal smell for two or three days, with a mould on the surface of the crassamentum, be supposed marks of it) any apparent putrefactive

treffective process; and on the 4th of November, being sixteen days from the operation, it remained in the same state: whereas the healthy blood exhibited evident marks of great putrefaction in four days, and we were obliged to throw it away on the seventh.

*Retrospect of the Origin and Progress of the  
Disease to its present State.*

This disease has continued seven months and upwards. I saw the patient for a day or two in June, when the disease was detected. Previous to which, he had used nitre and small doses of mercury, but then the disease as diabetes had not been ascertained. From June to the date of the present report, he had been living on the kind of diet described, and had taken some remedies under the direction of an eminent Physician at Yarmouth, the principal of which were bark and alum. Occasionally he found himself relieved, having less fever,



and the quantity of urine being diminished at one time to two or three quarts a day, but without any change in its sensible qualities. Sugar was also allowed during this treatment, and he took it in the form of treacle, and spruce beer in considerable quantity, and the disease seemed to increase during its use.

He has fallen away in fat and flesh considerably, and his muscles are flabby. In October, 1794, when in apparent health, he weighed 16 stone and 8 pounds, and in November, 1796, 11 stone 8 pounds, shewing a loss by the disease of no less than five stone in weight.

For the six months preceding the attack of the disease, he was sick, and vomited at least two or three times a week, and he frequently brought up from the stomach during these vomitings, different things which he had eaten several days before, unaltered, and the taste was generally sour.

He

He always eat heartily and drank freely, but not intemperately, and was fond of high seasoned and fat dishes. He had had two regular attacks of gout, and had at other times two severe fits of cholic. He has been twice married, and has two children. His age is 34. Stature 5 feet 11 inches and  $\frac{3}{4}$ . Hair light brown. Eyes dark blue. Complexion fair.

On a subsequent enquiry of his mode of life for several years previous to the six months immediately preceding the diabetic attack, he gave me the following account.

That during the three years next to the attack of the disease he had been very actively employed in camp duties; and his appetite was then so good, or that he eat so keenly as to be taken notice of by his brother officers; but had no complaint, on the contrary conceived himself in high health. And that for some years preceding these, he was less actively employed, and though he  
eat

eat heartily, his appetite and indulgence were not remarkable.

*The Nature and Progress of the Disease, with its Treatment from the 16th of October.*

As the disease was evidently going on, and lately very rapidly, it was thought proper to adopt steps the reverse of what had been pursued.

Two views of the disease presented themselves; the one as depending primarily on a changed process of digestion, the other on a primary action and condition of the kidneys.

Mr. Cruickshank and Dr. Wittman having seen the patient on the 17th with me, it was agreed to meet on the evening of the 18th, so as to form our view of the nature of the disease, and a corresponding treatment. To them I submitted the following remarks, and which were founded on  
the



the history of the case, and on what had passed in previous conversations on the subject.

1. The stomach affection, pointed out by the variation in the degree of appetite, and the sensation after eating; the state of the digestion for six months previous to the actual appearance of the disease; the costive habit and the appearance of the stools; the taste of the salivary discharge; the phenomena of the blood, and the wasting of the body, mark a general disease depending on a changed and peculiar state of the stomach, by which sugar or matter possessing saccharine properties is copiously formed, with a defect of assimilation. The mere defect, however, of which may not account for the quantity of saccharine matter formed, though it certainly constitutes part of the nature of the disease. The existence of such a defect in the assimilating powers we apprehend is manifest from the quantity of animal, exclusive of saccharine matter voided with the urine, and from the wasting of fat and flesh,

flesh, having lost five stone weight by the disease.

2. The serum of the blood apparently containing less saccharine matter than the urine, may depend on the power of the kidneys in separating it in common with the other saline matters of the blood; but proving a new and peculiar stimulus their action is increased, and the saccharine matter consequently separated speedily and in proportion to its formation in the stomach.

3. The buff on the blood, the white tongue, the thirst and quickened pulse, with the heat and dryness of the skin, and the flushed face, point out an increased action of some kind in the whole system.

4. The painful state of the kidneys, the feelings in the loins and belly, and of the right leg, point out some morbid state of the kidneys, arising from the long continuance of an increased action, and the operation of a peculiar stimulus.

5. The

5. The quantity of urine discharged being greater than any quantity of liquids or solids received into the stomach, there may be a greater absorption from the skin and lungs. The increased absorption from the skin no doubt depends upon the great quantity of fluids separated by the kidneys, and this secretion, as has been suggested in the 2d and 4th inferences, upon some peculiar stimulus applied to those organs. The skin absorption may therefore be considered as an effect, and an action of necessity. But exclusive of increased absorption of mere fluid by the skin, it is supposed there may be something peculiar absorbed by the skin and lungs, and which may have a share in maintaining the disease after it has been produced.

6. The objects of treatment therefore appeared to be to destroy the saccharine process going on in the stomach, to promote a healthy assimilation, and as auxiliaries, to prevent the supposed increase of absorption from the surface, to diminish the increased

increased action, and to change the imagined derangement of the kidneys.

The particular arrangement of the treatment as resolved upon, was as follows.

1st. The diet to consist of animal food principally, and to be thus regulated :

*Breakfast.*—One and a half pint of milk and half a pint of lime-water, mixed together; bread and butter.

*Noon.*—Plain blood-puddings, made of blood and suet only.

*Dinner.*—Game or old meats which have been long kept; and as far as the stomach may bear, fat and rancid old meats, as pork. To eat in moderation.

*Supper.*—The same as breakfast.

2dly. A drachm of kali sulphuratum to be dissolved in four quarts of water which  
has



has been boiled, and to be used for daily drink.

No other article whatever, either eatable or drinkable, to be allowed than what has been stated.

3dly. The skin to be anointed with hog's lard every morning. Flannel to be worn next the skin. The gentlest exercise to be only permitted, but confinement to be preferred.

4thly. A draught at bed-time of twenty drops of tartarised antimonial wine, and twenty-five of tincture of opium, and the quantities to be gradually increased. In reserve, as substances diminishing action, tobacco and foxglove.

5thly. An ulceration, about the size of half a crown, to be produced and maintained externally, and immediately opposite to each kidney. And,

6thly.

6thly. A pill of equal parts aloes and soap, to keep the bowels regularly open.

*On the 19th October* (when he was in the same state as on the 16th) the patient had a copy of the plan of treatment, and which he commenced the same day, and was desired to journalize as he went on.

*So soon as the 21st* some changes occurred; he made in the 24 hours only six quarts of urine, and drank only three quarts of the sulphurated alkaline water; the urine was not so pale, had a cloud in it, and was more urinous in smell.

We think it proper here to observe, that the blood-letting seemed to relieve the patient, as he felt the evening of the same day, according to his own expressions, lighter, cooler, and more chearful, and had less pain about the kidneys; and this was on the 18th, the day before the particular treatment was commenced. This circumstance

stance confirms our 3d inference of an increased general action.

*November the 1st.*

The only alteration in the treatment since the 21st October, was in the occasional use of sulphur in place of the pills, and the kali sulphuratum increased to two drachms daily. This day the quantity of urine did not exceed four quarts, and the urine was of a higher colour and more urinous smell; thirst less; the drink not exceeding two quarts a day; skin moist and perspires freely in the night; the stomach and belly are much less uneasy, though he complains much of pain from the ulcerated parts in the loins; stools large and very offensive.

Supposing that the quantity of alkaline salt he took daily in the kali sulphuratum, might have some improper effect on the kidneys, it was resolved to try the hepatised ammonia (pure volatile alkali saturated with hepatic gas. See Dr. Crawford's paper on muriated baryles, in the second volume of

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the Medical Communications) a medicine proposed by Mr. *Cruickshank*, and who was of opinion it might prove a more certain and active medicine than the other on the stomach, in diminishing its action, as well as the action of the system in general. He was directed to take five drops in each half pint tumblerful of water as drink. He took the first day 35 drops at different times, which in the evening produced sickness and vomiting, with a giddiness and drowsiness. He threw up some apple-pie which he had secretly eaten three days before. The apples and crust had not apparently undergone the slightest attention. He was directed to leave off the hepatised ammonia for one day, and then to begin with two drops to each tumblerful.

*On the 4th* he drank only three pints of water, and made only two quarts of urine, which to him and his servants (who had been in the habit of tasting his urine from curiosity) was not sweet, and it deposited a red, sandy or lateritious sediment.

*On*



*On the 5th* the opiate at bed-time was discontinued, and on the 8th the rubbing with the hog's lard was left off.

The unction with hog's lard being a troublesome and disagreeable part of the treatment, was discontinued as soon as a decided change took place in the urine, with the intention of renewing it again if necessary. It being now determined to simplify the procedure as much as possible, the parts deemed most essential were only to be retained, and these we conceived were confinement, animal food, and the hepatised ammonia.

The following reports marked with an asterisk are copied from the patient's own journal, as they contain important information.

*Nov. 12.*

\* Continued as before ; the four drops of hepatised ammonia made me as usually giddy, and having taken at different times

C 2

16 drops,

16 drops, my pulse was only 67 movements in the minute; slept well; no stool; took my sulphur with an increase of one tea-spoonful; did not make quite two quarts of urine during the last 24 hours, but still of the same paleness as yesterday, though of a salt taste and urinous smell.

13<sup>th</sup>.

\* My urine still of a pale colour, and rather inclined to a sweet taste, made during the 24 hours two quarts; drank five half pint tumblerfuls of water, with four drops in each; slept well; perspired much; no stool; took two tea-spoonfuls of sulphur.

*Note.*—On the 12th I took much exercise; I also drank some tea, and for supper eat a broiled kidney, dressed with walnut catchup.

14<sup>th</sup>.

\* Urine still pale, but not quite so sweet as yesterday, made two quarts during the day and night; drank only four half pint tumblerfuls

tumblerfuls of water, with four drops in each of the hepatifed ammonia. Am de-fired to leave off bread entirely.

*Note.*—I erred, however, by drinking beer to-day, and which I repeated on the day following.

*Remarks.*

As the disease seemed to have been re-produced, an entire abstinence from vegetable matter was directed on the 14th; but it appeared afterwards that he drank some beer on that day and the 15th. However, on the 16th animal food was only taken, and which was to be continued without the smallest portion of vegetable matter, nothing to be allowed approaching nearer to it than milk, and even this was to be left off and strong beef-tea substituted, should the disease not disappear.

17th.

\* Urine of a much higher colour, and its smell and taste quite urinous; made only

three pints and a half during the 24 hours; drank in the same time five half pints of water, with five drops of the hepatised ammonia in each, and which occasioned me to be very sleepy and giddy towards the evening, and at that time my pulse was extremely weak, and only beat 50 movements in the minute. Had two stools.

*Note.*—At one time during the afternoon, by accident, I took at least from 15 to 20 drops of the hepatised ammonia at once, soon after which I was seized with extreme languor and giddiness.

#### *Remarks.*

Those reports \* point out the influence of even a slight deviation from a proper diet and confinement in reproducing the disease, and tend to confirm the explanation given of its nature, and the effects of the hepatised ammonia as a powerful narcotic in certain states of the system.

But



But as it is evident the disposition to the disease continues, with a diminished appetite, a pure bitter is therefore to be given, with a view of assisting the other parts of the treatment in changing the state of the stomach. The removal of the disposition must be finally accomplished by a long perseverance in the means of cure.

From the 21st to the 24th of November, he had sickness and vomiting, with griping in the bowels, resembling a common bilious attack, and for the production of which no reason could be assigned, except what might be attributed to the animal diet and the approach of an opposite state of stomach induced by it, the hepatised ammonia, and confinement. He had an emetic of ipecacuan, and the following morning a dose of castor oil. He threw up by the emetic an acid greenish matter, and the morning following the urine was evidently more urinous. The acid green matter thrown up after so entire a diet of animal food, shews the strongest disposition in the stomach to

C 4

acidity.

acidity. The present observation also points out the probable advantage to be derived from changing the condition of the stomach, as well as emptying its contents by the occasional use of emetics. It has been observed, that after any unusual commotion in the stomach and bowels, the urine has always been more scanty and apparently more urinous the day immediately following. As the patient has shewn a dislike to the sulphur, castor oil is in future to be substituted when he has occasion for such a medicine.

Does not the effects of the hepatised ammonia, of emetics, and in short of whatever induces sickness or unpleasant commotions in the stomach, shew forcibly the dependence of this disease on a condition of it very different from that of health? Do they not shew that such a condition consists in an increased morbid action of the stomach? The affirmative of those questions is rendered still more probable when we consider the keenness and voraciousness  
of

of appetite the patient had, and the quickness of its returns. Can any thing be inferred from any supposed change in the condition of the gastric fluid? The peculiar nature of the gastric fluid is but little understood; it is known, however, to possess very active properties, as is shewn by its effects on the dead stomach, and the experiments of Spalanzani, &c. and if these are admitted, there can be no doubt but that it is the most efficient fluid in the body, and may, like other secretions, be liable to morbid changes, producing singular and extraordinary effects, though at present altogether unknown.

We would on the whole say, that the cause of our diabetic disease very probably consisted in too great an action of a morbid kind of the muscular fibres of the stomach, with the secretion of too great a quantity of the gastric fluid, and some alteration in its quality, producing with substances capable of forming it saccharine matter, and a certain defect in the powers of assimilation;  
probably

probably depending also in part on too active a state of the lacteal absorbents. With this opinion we do not suppose the circumstance of food being thrown up unaltered interferes, as the great quantity so frequently eaten prevented the stomach from getting quit of all its contents unchanged, especially as it would no doubt act in preference on those matters suiting its peculiar morbid condition. A species of indigestion, however, might be allowed, as in this disease we suppose digestion to be totally changed, from the results of the peculiar process of the stomach being so entirely different from what usually occurs. For though the action of the stomach is increased, yet being morbidly so, the salutary products are neither formed or applied.

Anorexy, as depending on dyspepsy, has been alledged to consist in a diminution of the muscular action of the stomach, or in a vitiated state of the gastric liquor, or in a deficiency of it. In anorexy, remedies weakening the tone of the stomach or system



tem in general, always increase the disease; the most successful treatment (at least this is the general opinion) being by remedies giving tone and action to the stomach. In our disease, a keenness of appetite to voraciousness has always attended, except during the mere temporary disgust arising from absolute accumulation; and the changes for the better have been by those remedies which diminish the action of the system in general, and of the stomach in particular, as shewn by the effects of confinement, blood-letting, emetics and hepatised ammonia. At one time, when the disease was apparently removed, there seemed to be, by the patient's narration, a tendency to anorexy, and on this account a bitter was given, to prevent the stomach from running too speedily into an opposite state, likely to produce a new disease.

In the second order of the Class Locales, of Dr. Cullen's Nosological Arrangement, we find the disease termed Bulimia, and the character of the third idiopathic species of it is,

is, Bulimia (emetica) cibum magna copia appetens, et mox per vomitum rejiciens. And this is the Bulimia Canina of Sauvage, who gives the only distinct, though concise description of it we could find; there are, however, detached accounts of it in James's Medicinal Dictionary. To both we beg leave to refer, as our present Case bears a resemblance to it, especially in that part of it previous to the accession of Diabetes. In those accounts of Bulimia, nothing is mentioned with regard to urine. But the disease is said to terminate fatally in atrophy, dropy, &c. Sauvage says the Bulimia Canina is owing to an acrimony of the digestive juices, and an irritability of the stomach. Absorbents or alkalies, fat meats, oils, sedatives and narcotics, are the remedies pointed out. Dr. James observes, that in Bulimia, "such medicines as mightily relax and moisten the stomach, and correct the acidity of the humour, have a peculiar virtue in taking off the sense of hunger. Of this sort are all pinguious and oleaginous things; as, fats, oils, and the extremities of animals.

animals. Thus Villanovanus relates, that a certain man affected with this disease, eat pot-bread dipt in lees of oil; and that a woman in the like case, drank twice the melted fat of beef, with a like quantity of hot oil; and that both these patients contracted so great a loathing of food, that neither of them eat any thing for five days, and so got rid of their distemper. Narcotics, by blunting the too exquisite sense of the stomach, have a virtue of moderating the Fames Canina."

Does not the Bulimia Canina resemble in its nature not only the state preceding the diabetic attack in our Case, as we have related it, but also the disease itself?

Is it not probable that the urine of the Bulimia Canina would have been found sweet, or having saccharine matter?

At any rate, the Bulimia shews an affection of the stomach very different from what is supposed in anorexy; and it approximates  
to

to the nature of our disease. And to us it is of importance, as exhibiting a disease of the stomach depending on great irritability, and requiring narcotic remedies. We also suppose a changed state of the gastric fluid, and a defect of the digestive process, wanting absorbents or alkalies, and food of the most highly animalized kind.

A diet of animal food, especially as rancid as possible, was proposed in our Case, with the view of preventing the formation of sugar in the stomach, and by that means to remove the peculiar stimulus which supported the increased action of the kidneys. The kali sulphuratum, it was supposed, would not only tend to diminish the too great action of the organs of digestion, but likewise chemically counteract the formation of sugar, and thus act in concert with rancid and fat animal food; but the hepatised ammonia, for reasons formerly mentioned, is now preferred, as the most certain and active medicine.



26th.

\* Urine quite natural, and the quantity during the day and night not exceeding three half pints. My thirst quite allayed, not having even the desire to drink which I recollect to have had previous to the attack of the Diabetes. Drank three wine glassfuls of an infusion of quassia with mineral alkali; and I feel in every respect, except that of weakness in my limbs, in good health.

*Remarks.*

A portion of this day's urine was examined; it was found high coloured, very urinous in smell, having a bitterish and saltish taste without sweetness, and depositing a slight gritty and reddish sediment. Dr. *Wittman* evaporated a portion of it, and he assured me no sensible saccharine matter was discoverable in the residuum, by either smell or taste.

The

The daily accounts which follow, and marked with the asterisk, are also from the patient's own journal, and they shew the same circumstances as those related; but being if possible more distinct, and more strongly corroborating our opinion of the disease, they are continued.

*27th.*

\* Urine less in quantity than yesterday by half a pint—did not make any during the night, but made a half pint tumblerful when I got up in the morning, and it was quite urinous. Drank during the 24 hours two half pint tumblerfuls of water with hepatised ammonia. Had a good stool. Continued the bitter.

*28th.*

\* Made three pints of urine during this day and night. Drank in the same time two tumblerfuls of water with hepatised ammonia. Had a good stool. I walked this day more than usual, went down to  
the

the Warren and was weighed (the result of which has been already given.) In my return home purchased some apples, and eat a large one. Continued the bitter.

29th.

\* My urine increased to very near a quart, and of a paler colour (a portion of this was evaporated, and it yielded a saccharine matter resembling honey.) I went to London, where I drank some coffee and eat a Shrewsbury cake, and returned to Woolwich to dinner. Drank two tumblerfuls of water, with hepatised ammonia. Had a good stool. One of the sores on my loins healed up, the other healing.

*Remarks.*

It may be here remarked, that the progress of the case has justified our second primary inference, namely, that the saccharine matter proved a new and peculiar stimulus to the kidneys, and increased their action. For it has appeared that the decrease in the

D

quantity

quantity of urine has been in proportion to that of the saccharine matter, and hence a corresponding diminution of the action of the kidneys. But if, as we suggested in our fourth inference, a change of structure in the kidneys, of a nature different from mere enlargement of vessels, had taken place, perhaps the diminution of urine would not have been so speedy and determined. It remains, however, still to be ascertained whether any peculiar condition of kidneys has been formed by the disease. So far as we have as yet gone, it does not appear probable.

Besides the increase of kidney action from the saccharine matter, there may have been in our case an effect producing increase of action from sympathy with the stomach, an effect which is not unusual in other cases of disease, and it even occurs in health, when the stomach is under the influence of a stimulus, as of wine.



*30th.*

\* Made only one pint of urine during the day and night, its smell urinous, but of a paler colour, and rather of a sweetish taste. Walked as on the 28th. Drank two half pint tumblerfuls of water, with the drops. Continued my bitter. Eat an apple.

*December 1st.*

\* Made one pint and a half of urine during the day and night, its taste quite salt, but of a pale colour. Drank in the same time only one tumblerful of water, with four drops of the hepatised ammonia. Took my alkali in milk, and the bitter medicine. Had a good stool. Eat hare for dinner, with some of its stuffing, and which consisted of bread and parsley.

*2d.*

\* Made the same quantity of urine, and which had the same colour and taste as yesterday. Eat bread and cheese after dinner,

D 2

and

and drank a tumblerful of beer. Took the bitters and hepatifed ammonia as usual.

5th. 3d.

\* The same quantity of urine, and of the same sensible qualities as yesterday. I also eat bread and cheese and drank beer.

4th.

\* Made a quart of urine, of the same quality as yesterday. I eat bread which had been soaked under roast mutton; I also eat bread and cheese, and drank two small mugs of beer.

5th.

\* My urine as yesterday. Eat animal food only; and took an emetic of ipecacuan in the evening, which made me very sick, and I brought up all I had eaten in the course of the day, and in the last puke the matter was very four.

6th.

\* Urine since last night not exceeding a pint and a quarter, high coloured, very  
urinous

urinous in smell, and depositing a reddish sand. Continued my bitter, alkali in milk, and the hepatised ammonia.

*Remarks.*

The patient was strongly remonstrated with, and he was told the consequence of repeated deviations, in probably fixing the disposition to the disease so firmly as not only to increase the difficulty, but to establish the impracticability of removing it. Fair promises were therefore renewed, and absolute confinement to the house, entire animal food, and the hepatised ammonia as before, with the quassia infusion, were prescribed and agreed upon. The urine continued pale, though salt and of an urinous smell; but on Sunday the 4th December, the urine had a doubtful smell, and some of it was evaporated, and it yielded a residuum evidently saccharine, though much less so than in the first experiment, the urinous salts being now more predominant. We were in some difficulty; it was suggested that a portion of the apples might be still in

his stomach, as it had not been unusual for him to throw up matters unaltered several days after they had been taken in: at this time we were unacquainted with the vegetable matter eaten and drank the four first days of December, as the reports were not received from him until afterwards. It was resolved to give him on the 5th an emetic. On this being proposed to him an aversion was signified; and he acknowledged having taken vegetable matter in bread and small beer for the four days preceding. The emetic was, however, given in the evening, and the contents thrown up appeared to be chiefly what had been eaten the same day. So far the emetic marked a favourable change in the state of digestion. It was now judged necessary to point out in stronger language the impropriety of such deviations; and there is more reason to expect, from the apparent result, that a correct steadiness will be the consequence.

The four matter thrown up by the emetic shews the strong disposition in the stomach  
to



to acidity (see the remarks following the 17th November), and the high colour and deposition of the urine shews probably the same thing, as it has been observed by others (Mr. Forbes on Gout and Gravel, and Dr. Wilson on Gravel and Dyspepsy) that such high colour and deposition was augmented if not produced by vegetable and acid diet, and that when sourness prevailed sensibly in the stomach, the deposition of sandy matter was always more abundant; hence the formation of calculous complaints, and even gout has been explained as depending on a dyspeptic state of the stomach. I have been told, however, by one individual who may be relied on, that when he is sensible of acidity in his stomach, his urine is always clear, and deposits no sand or reddish sediment.

The sourness or acidity discoverable in our patient's stomach, after so long an use of animal food, points out a condition of the stomach unfavourable to the putrefaction of animal food. Doctor Fordyce says,

in his Essay on Digestion, that in a stomach not in perfect force animal food will putrify, although in a stomach in perfect force, not only putrefaction will not go on, but will be even stopped, and the appearance of it destroyed. With a stomach therefore in perfect force, a Laplander may live on rein deer alone for the most part of the year, without any portion of vegetable food. So may the inhabitants of Orange River, in Africa, on limpets, dead and putrid seals and whales, without tasting a particle of vegetable food excepting aromatics. And so might the inhabitants of this country live (as they did three centuries ago, at least six months in the year) on animal food, without any other vegetable substance than farinaceous matter. And all be exempted from scurvy or any other detriment.

Nine ounces troy weight of the last day's urine were evaporated by Mr. *Cruickshank*, and it yielded (of a matter the same in consistence as that of the experiment of the 16th October, but not so tenacious) five drachms, which

which was of a urinous smell and taste, and did not impart any sensible impression of the existence of saccharine matter. It seemed to have very little difference in smell or appearance, except in being more tenacious from the residuum of nine ounces of my own urine, which weighed  $3\frac{1}{2}$  drachms, a quantity less than the other by  $1\frac{1}{2}$  drachm. If, therefore, we multiply our patient's urinary residuum by four, it gives two ounces and a half as the result of 36 ounces, which is five drachms less than was afforded by the same quantity of urine in the experiment of the 16th October, and of course approaches more nearly to the amount of the residuum of healthy urine.

A portion of the residuum of our patient's urine and mine were separately treated by Mr. *Cruikshank* with nitrous acid; but the honey-like matter formed in the experiment of the 16th October, was not produced; the results of both being very sharply acid and bitter, and apparently containing nothing but phosphoric salts, and nitrate of lime;

lime; though in examining afterwards the small portions which remained after evaporation, a little oxalic acid was detected in that of our patient; but this might have been produced by animal mucilage, and of course does not prove the presence of saccharine matter or vegetable mucilage.

A portion of this residuum was treated in a different manner, by being exposed to heat in a coated retort. The products obtained were much carbonate of ammonia, a little animal oil, and what remained in the retort had every appearance of animal coal, being difficult to incinerate, and leaving nothing but a very small quantity of the phosphats of lime and soda. Had there been any quantity of vegetable mucilage, or sugar, the syrupous or pyro-mucous acid would have been obtained at least in the first products, and the residuary coal afforded potash.

May not the high colour of our patient's urine on the 6th December, and its more  
urinous



urinous appearance, depend on the operation of the emetic, as well as on the correctness of eating yesterday? For it has been observed during the disease, that the urine was always more urinous after any derangement of the stomach, and does not this, with all the other striking phenomena which have been described as existing at the commencement of the treatment, or during its course, demonstrate that the primary seat of the disease is in the organs of digestion and assimilation, depending on an increased morbid action of the stomach, &c.?

*7th.*

\* Made no urine during this day, except about a wine glassful, nauseously salt and urinous. By mistake I took a greater number of drops of the hepatised ammonia, in a tumblerful of water, than I was directed. The effect was instantaneous, in producing a severe pain and shooting in my head, which continued for three hours. Doctor Rollo called about eight o'clock in the evening, when my headach was nearly gone;  
but

but my pulse was then only 60 in a minute. On going to bed, and on getting up in the morning of the 8th, I made urine, at both times the quantity did not exceed a pint and a half, was of a strong urinous smell, high coloured, and deposited a great quantity of sandy matter. My appetite is very good, and as my diet is confined to animal food, I never find myself satisfied after eating. I take my alkali and bitter.

*Remarks.*

The patient's feeling of not being satisfied with what he eats, marking still a degree of the state of stomach which we have supposed to depend on an increased secretion of the gastric fluid and muscular action of the stomach, the bitter was directed to be discontinued, and not to be repeated unless symptoms of the opposite state arise, that is, a state marked by anorexy.

Mr. *Cruickshank* evaporated nine ounces of urine voided last night and this morning, and it yielded of a brownish residuum not  
tenacious,

tenacious, and of a highly urinous and animalized smell, three drachms, which is at the rate of one ounce and a half in 36 ounces of the urine, a difference of result, when compared with that obtained from the same quantity of the urine of the 16th October, of one ounce and five drachms, and amounting to less than the weight of the residuum from the same quantity of my urine by two drachms—the residuums had also as nearly as possible the same appearances.

Does not this great diminution of animal matter in the urine, when connected with the other changes marking the removal of the disease, shew that the assimilating powers are assuming, or have assumed a healthy action? This is rendered further probable, if not certain, by considering that the amount of animal and saline matter, formed and separated in 24 hours, by this day's experiment does not exceed an ounce, whereas at first he was forming and separating not less than 29 ounces during the same time;  
and

and that from the increasing fullness of countenance and firmness of flesh generally, nutrition seems to be applied. It is intended to re-weigh him, and should there be an increase of weight, the fact will be established.

*8th.*

\* Made the last 24 hours one pint and a half of urine, of the natural smell, taste, and colour, and without any of the sandy-like sediment. (Does not the want of this mark a more healthy urine and condition of stomach?) Continue the water and hepatised ammonia, and the alkali in my milk; the bitter has been laid aside.

*Remarks.*

On enquiry I found that the excoriation and foreness of the penis was entirely gone, but that the prepuce could not be completely retracted. The gums have lost their reddish appearance, and the teeth are firm and without the feel of being on edge. The penis affection was, previous to the treatment,



ment, occasionally very troublesome; it seems to have been owing to the very constant application of the saccharine matter, as it ceased gradually on its disappearance. Both circumstances, though apparently trifling, we hold to be of consequence, as they assist in proving the absence of the disease. But the state of the mouth was considered of more importance than the other, as strengthening the opinion of the diffusion of the saccharine matter over the system and its removal.

*9th.*

Two portions of blood, of about three ounces each, were taken at eleven this forenoon from the same vein, and in a free stream. The patient was averse to the operation, and could not help declaring, that his Physician at Yarmouth had told him, when I had advised blood-letting, that unless he met with a criminal having the disease, no request or opinion could induce him to perform that operation in such a case. I answered, that he would soon  
return,

return, should his duty lead him, and inform his Physician that he had been bled twice, and was cured. He then submitted without further murmuring to the operation, which was performed by Dr. *Wittman*.

The portions of blood were examined at two P. M. and both were found to have an uniform mass appearance. Each portion was covered with a very thin pellicle of coagulable lymph of a loose texture, resembling the white of an egg, except which, there was no other separation of parts exhibited. But in order to ascertain this more exactly, a penknife was plunged into different places of the portion in the second cup, or that which was last drawn, and it was found throughout of a loose texture, having no distinct separation of crassamentum and serum; indeed it appeared as one soft mass: the red part being of a dark colour. It may be necessary to observe, that the cups were placed in a window fronting the north (the thermometer on the outside of a window in such

such an aspect was at the same time to-day 27): the cups, after the examination, were removed to the chimney-piece, over a good fire, to be re-examined in the evening.

From the appearance of the blood, we think it not improbable an opposite state of the system is likely to occur; though the account of the gums and teeth as given yesterday do not point out any advance, yet the patient will be unremittingly watched. It may be also observed, that he felt very differently to-day after the blood-letting to what he did on the 18th October, then he became lighter and more chearful, whereas to-day he felt heavy and languid.

Nine o'clock P. M. re-examined the portions of blood. The surface of the blood in the second cup was found to be of a florid red, the pellicle thicker and of a tougher consistence, but without any further separation of parts, all being in one apparent connected mass. The portion of the blood

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first

first drawn, which was left untouched, was also found to be in an uniform mass, without any separation of serum; the whole was, however, much firmer than at two o'clock, and the pellicle of coagulable lymph was thicker and tougher. The blood in both, under the pellicles, was very black. Therefore the cold may have had some influence, as the blood exhibited rather different appearances, though still it might be said to be in rather a dissolved state, and approaching to that of scurvy, the advance of which is rendered more probable by the languor following the operation. He is now, however, chearful, and satisfied that his disease is removed. He has made no urine since the morning, nor has he any desire to void any this evening. He is directed to leave off the alkali, and also the hepatised ammonia; and is to be allowed to walk out to-morrow. In a few days he will be permitted to ride gently, and to eat bread, should no circumstance intervene to prevent it.

*Remarks*



*Remarks on the Hepatified Ammonia.*

Mr. Cruickshank says that this medicine is very easily prepared, by making a stream of pure hepatic gas pass through the aq. ammon. pur. Ph. Lond. until no further absorption is perceived, or until the alkali is saturated. The hepatic, or sulphurated hydrogen gas, should be obtained for this purpose from artificial pyrites, or sulphuret of iron, and the muriatic acid.

The easiest method of making the artificial pyrites, is to raise a piece of iron in a smith's forge to a white heat, and then to rub it against the end of a roll of sulphur; the iron at this temperature immediately combines with the sulphur, and forms globules of pyrites, which should be received into a vessel filled with water; those globules are to be reduced to powder, and introduced into the proof, to which a sufficient quantity of the muriatic acid is to be added.

The dose to an adult should not at first exceed three or four drops, to be given three or four times a day, and this dose to be gradually increased, so as to produce slight giddiness; but as it is a very powerful and, in large doses, a dangerous medicine, great caution should be used in its exhibition; for the want of which our diabetic patient two or three times experienced much distress.

The hepatized ammonia has been given in a case of extreme irritability with a local sore, the product of the venereal disease and mercury, with surprising good effect; also to the sore hepatic gas was applied, and a diet of animal food prescribed. This case was under the charge of Dr. Irwin, of the Artillery, who was very attentive to the exhibition. It has been also given in a case of pectoral complaint with advantage; and is likely to turn out a valuable medicine.

18th.

Captain *Meredith*, as has been related, left off the pure liquid alkali which he took in  
his

his milk, and also the hepatifed ammonia on the 10th; he was likewise allowed to walk out, and which he continued to do until the 12th, when he was permitted to ride on horseback, and no unfavourable change arising, but on the contrary decided marks of the removal of the disease; he was desired to-day to eat half a pound of bread as a daily allowance, and to persist in his exercise.

*30th.*

Since the 18th he has continued free of disease, and is now in high spirits and rapidly gaining flesh; his urine does not exceed two pints, and it is often under that quantity, in 24 hours, and perfectly urinous. The fore on the other loin is healed. He can now retract the prepuce completely. A slight, scabby, painful eruption has appeared on the face, in the space between the chin and under lip.

To-day he weighed thirteen stone and one pound, which, when compared with

the weight of the 28th November last, it will be found that he has gained one stone and a half, and which furnishes a convincing proof, not only of the removal of the disease, but we trust of the disposition to it. Cautious steps are, however, for some time to be pursued, and as our patient seems now fully sensible how much depends upon himself, we have reason to hope there will be no return of the complaint. He is advised to eat rather less animal food, and more bread, but no other alteration as yet to be permitted.

*January 4th, 1797.*

Captain *Meredith* continues free of complaint.

*Remarks.*

Should another case of Diabetes similar to this occur, we would try confinement and animal food only, and if these did not succeed, gradually adopt the other parts of the treatment pursued in the present case. We would commence where the general action  
was



was strong, and, as in this case, accompanied with local pain, by blood-letting; but in every instance by an emetic and a dose of castor oil. In the present case we gave ipecacuan only; but perhaps the tartarised antimony might be found preferable, as it induces a greater degree of nausea, and its debilitating effects probably continue longer. The maintaining a nausea by the medicine after vomiting deserves a full trial, especially at the commencement of the disease. From the narcotic, independent of any other effects of the hepatised ammonia, and from the quiet nights produced by opium, we have no doubt that other narcotics, and medicines diminishing action, may prove of real utility under certain circumstances of this disease. But the preference, for the reasons formerly stated, is to be given to the hepatised ammonia. Perhaps camphor might be entitled to a trial. From the commencement of the treatment, and during its progress, we would recommend the quantity of solids and liquids daily taken, to be more accurately ascertained than was

done in the present case, in order to determine with more precision, by a comparison with the urine and its contents, the changes going on in assimilation, and so ascertain the return of those which are healthful.

On the new doctrines of Chemistry, the nature and treatment of the Diabetes Mellitus may be explained; at least our Case of diabetic disease may be said to have depended on a hyper-oxygenated state of the system, formed by a morbid condition of the stomach, and peculiar combinations in it, and which might have been afterwards maintained by a certain condition of the skin and lungs. Hence the obvious remedies would be those abstracting oxygene from the system, removing the morbid condition of the stomach and its peculiar combinations, and changing the condition of the skin and lungs. Breathing a lowered atmosphere by confinement in a small room, abstinence from exercise, rubbing the skin with hog's lard, the use of a diet of animal food, and as rancid as can be eaten, the internal

ternal exhibition of hepatised ammonia and narcotics, and we should perhaps add the employment of emetics and nauseating doses of antimony, with the occasional use of sulphur and castor oil when requisite, furnish the particular remedies.

The case of extreme irritability with local fore, may be explained by the same doctrine, as it was supposed to have depended on a certain hyper-oxygenated state, the effects of mercury; and from the almost immediate healthy changes produced by the hepatised ammonia and hepatic gas, with animal food, that supposition is rendered extremely probable.

As connected with the application of the new doctrines of Chemistry to Medicine, we relate the following fact, which corroborates Dr. Trotter's idea of scurvy as arising from the want of recent vegetables. The scurvy appeared among the convicts off Woolwich on board of vessels moored in the Thames, about the 13th April, 1795, a disease which, so far

as

as I could learn, had not hitherto prevailed. The preceding winter was very severe, and the men were confined on board, as labour on shore was impracticable. Their diet consisted of boiled barley or oatmeal porridge for breakfast and supper; broth of ox-cheeks and shins of beef, with a portion of the meat for dinner; a proper allowance of bread, and three pints of small beer daily. They had no fresh or recent vegetables from the 12th October, 1794, to the 24th April, 1795. The scurvy as has been stated began to appear about the 13th April. On the 3d July, I visited the ships with Mr. Hornsby, the surgeon of the convicts, and Doctor Jameson of the artillery, and we found only three men with any symptoms of scurvy remaining. The disease was soon checked, as recent vegetables were supplied eleven days after its appearance.

During that winter, and when the convicts were not allowed to be on shore, they were mostly kept on deck in the day-time, and the hatches and port-holes were daily open,



open, and only shut when the weather absolutely required it: there were however grates to the hatches and port-holes which were used in bad weather, and by this means a succession of fresh air was always permitted.

In some of these unfortunate persons, a depressed state of mind, in all, cold, want of active exercise and recent vegetables were the only circumstances which could be assigned as the causes of scurvy. But it is only the want of active exercise (perhaps principally by producing a stomach of imperfect force, see the remarks under the 6th December) and fresh vegetables that appeared the exciting causes, as the others had always prevailed in winter.

That the application of the new Chemistry to Medicine will in time prove of the greatest advantage there is not the least doubt. Not only the nature of diseases, but their treatment will become more satisfactorily and successfully illustrated. We  
are

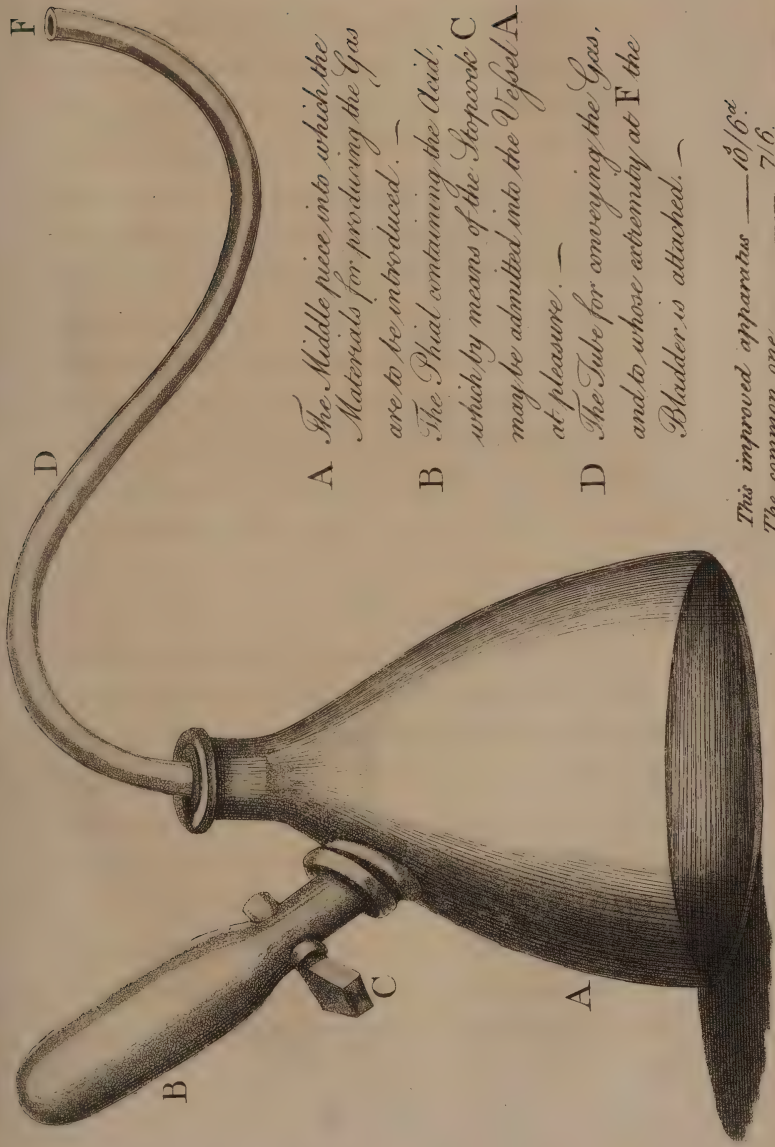
are however of opinion, that the progress to its therapeutic perfection must be chiefly by attention to the stomach. The conveyance by the lungs pneumatically is a mode of difficulty, and perhaps of uncertain effect. The same may be said of the skin. By means of the stomach, and general regimen, the system may be hyper-oxygenated, may be de-oxygenated, and may be confined to its necessary oxygenated state. Our notes on the Diabetic Case illustrate this, but further trials and investigations will more certainly confirm the remarks; we would therefore recommend, that the principal attention in the application of the doctrines of the new Chemistry to the removal of disease, should be by the stomach, and general regimen. Time and industry will add to our present stock of agents. It is a great step to be enabled to say, that by a mode of conduct we can not only produce something a-kin to scurvy, and affections of a directly opposite tendency, but also remove them—an advance of knowledge to which we have already arrived. Within this range of progress

grefs may be introduced the means of destroying specific contagion by the oxygenated muriatic acid gas. Mr. *Cruickshank*, in March 1795, took two portions of recent small pox matter from the same person, and exposed one portion to the gas for a few minutes, and with it inoculated the left arms of three drummers, while the right arms were inoculated with some of the other portion. The punctures of the left arms had no marks of inflammation except what simple puncture produces, and they entirely disappeared in a few days. But the right arms took on the variolous action, and in two of the persons there was a general eruption. This experiment has been since repeated, and with the same success. In the Royal Artillery Hospital at Woolwich, the oxygenated muriatic gas has been also used by Mr. *Cruickshank* to destroy more general contagion, and not unfrequently the offensive smell of sores, &c. which it does very speedily and effectually, and we have found that it can be managed with perfect ease and safety, and being cheaper, as well as probably

probably more efficacious than any other, we are inclined to give it the preference.

It has been likewise applied by a very simple contrivance to sores arising from morbid poison, and to sloughing and ulcerating sores unaccompanied with much pain and irritability. The carbonic acid gas has been also applied in the usual cases by the same means with good effect—and with the same advantage in like manner the hydrogen and hepatic gasses have been applied to painful and irritable sores. The apparatus for the purpose is very simple, and may be had of Mr. Blades, a very ingenious glass manufacturer on Ludgate Hill, the value about 7s. 6d. It is nothing more than a proof with an improvement for introducing the acid at pleasure, by means of a small bottle with a stop-cork adapted to the proof in place of a common stopper. If a bladder with the bottom part cut off be fastened to the extremity of the tube, we can apply the gas to any part, and for any length of time we please: for by turning the cock, more  
acid





- A The Middle piece, into which the Materials for producing the Gas are to be introduced. —
- B The Phial containing the Acid, which, by means of the Stopcock C may be admitted into the Vessel A at pleasure. —
- D The Tube for conveying the Gas, and to whose extremity at F the Bladder is attached. —

This improved apparatus — 10/6<sup>d</sup>.  
The common one — 7/6.



acid can be introduced whenever the effervescence ceases, and consequently the bladder be kept uniformly distended with the peculiar gas we wish to employ. But the oxygenated muriatic gas is simply applied by moving the end of the glass tube over the fore, and without the bladder, as this gas can only be applied for a moment or two; indeed, in this way it produces the effects desired, namely, some chemical decomposition and a change of action in the part; for if longer continued, it acts as a caustic, and forms a slough.

28th.

Since the last report of the 4th, Captain *Meredith* has continued in apparent health, his appetite, &c. being natural. The eruptions about his mouth still continue, though they are now so trifling as hardly to be taken notice of. He has persevered in his diet and exercise. He is sometimes costive, which he obviates by castor oil. To-day he was weighed, and the difference was found to be 7 and a half pounds more than that of the  
30th

30th December; he has therefore gained two stone since the removal of the disease. Thirty six ounces of the urine voided in the last 24 hours were evaporated, and yielded one ounce, four drachms, and 20 grains—of a substance without tenacity, and of a very saline taste and urinous smell. This result gives 40 grains less than the residuum of his urine of the 7th December.

For these fourteen days past his saliva has been very saltish, his mouth feeling as if moistened with salt and water, which is a sensation he never had before, even in health. His urine this morning was not very high coloured, it had however a very urinous smell, tasting pungently salt, and depositing the red sand. The quantity of urine remains as stated in the report of the 30th December, never exceeding two pints in the 24 hours.

*February 8th.*

This day he was allowed to eat potatoes, and to continue them; he was requested to  
pay



pay particular attention to his urine twice a day, and immediately inform me should any change be produced! This however is not expected.

21<sup>st</sup>.

*Progress from the 8th to the 20th, as communicated by the Captain himself.*

\* My urine quite natural, the quantity upon an average one quart in the 24 hours—the quantity of liquids which I drink, including my milk, amounts to nearly the same quantity. The eruptions on my face not so bad since I used the nitrated mercurial ointment. I eat my bread and potatoes. I take horse and walking exercise, and find that I grow stronger. My bowels are regularly open, and my appetite seems natural and good.

He is directed to begin the use of cabbage, or greens of a similar nature, or boiled onions, or salad without acid sauce—also mustard, horse-radish, and common radish

F

when

when in season; tea or coffee without sugar. The diet in other respects to be as formerly. To be allowed a little brandy, or rum and water, when he feels at any time languid or after fatiguing exercise, having a thirst or a particular desire for such drink.

*From the 20th to the 27th.*

\* My urine continues quite natural, and the quantity does not exceed a quart in the 24 hours. On the 22d, I began eating cabbage and sallading, and have continued their use daily—no change has been produced in my urine.

I weighed myself for my own satisfaction on the 25th, and found that I had gained nine pounds since the last time, and on the whole have acquired two stone nine pounds, since the removal of my disease.

*March 15.*

*From the 27th February, to this date.*

\* Urine continues natural, and the quantity as stated in the last report.

My

My appetite is good, but not keen. I have no thirst; my spittle continues to have a very saltish taste.

I eat greens and potatoes every day.

*Remarks.*

This day he was weighed, and the amount was 14 stone nine pounds, from which take 11 stone eight pounds, and it appears he has gained, since the removal of his disease, three stone one pound in weight, but still falls short of the amount of his weight before the attack of the disease; he then weighed 16 stone eight pounds, and from which take 14 stone nine pounds, his present weight, it leaves a difference of one stone 13 pounds, to be acquired, which it is likely he will soon obtain, as he gains very fast, having added six pounds in about fifteen days.

Nine ounces of the urine (which was very salt to the taste, and of a high urinous smell) of the last 24 hours were evaporated, and

yielded of a brown and purgently saline bit-terish tasted matter, without tenacity, three drachms and 20 grains, which multiplied by four, gives one ounce, five drachms and 20 grains in 36 ounces of urine, an amount exceeding that of the urine of the 7th December by one drachm and 20 grains; but amounting nearly to the residuum of my urine as stated in the experiment of the 6th of the same month, which was one ounce and six drachms, the present experiment being only 40 grains less, therefore very nearly the state of healthy urine, if mine was to be considered as a standard.

We have thus finally concluded our first Case of Diabetic disease. Captain *Meredith* might, we apprehend, now eat and drink any thing with impunity; but it is recommended to him to live as he has done these last three weeks, until circumstances should arise to render any other change necessary, in order to prevent gout, as well as the chance of any diabetic return.

He



He was yesterday ordered on active service, to which he readily and cheerfully assented, and declared that it gave him the most sensible pleasure when called upon to perform the duties of his station, in being capable of executing them, and in continuing in a state to do so, as he was now fully persuaded his health depended entirely on his personal conduct in persevering in the appropriate regimen.



## CASE II.

**A** GENERAL OFFICER, aged 57, was first visited on the 8th January, 1797; when I found him to have the following complaints.

Excessive thirst, a foul tongue with red bright edges, and a great and constant spitting of saliva, in the form of what he terms *sixpences*, of a mawkish and sweetish, though sometimes a fourish taste—his teeth feel as on edge, are rather loose, and he has lost two; the gums are full and enlarged, and of a brighter red than natural.

His appetite is rather keen—he has no pain in his stomach, or fluttering in his belly; but he formerly had a heat in the stomach after breakfast; and he has a disa-

greeable sensation sometimes amounting to pain in his loins on rising or sitting down. He inclines to costiveness.

He makes much urine, to the quantity of ten or twelve pints in the 24 hours, to the voiding of which he has urgent propensities peculiarly distressing to him, and constantly dribbling. The urine is sweeter to the taste than Captain *Meredith's*, and it is of a lighter colour.

His skin is dry and slightly hot. Pulse 104, and rather feeble and small. His face is flushed.

His legs swell particularly towards night, and are oedematous, without the least redness or itching, and the swelling is only of about four or five weeks duration.

He has been occasionally subject, for these six weeks, to a tickling cough, with some pain in the chest, and it has sometimes been very troublesome to him, at present it is so trifling



trifling that he feels very little uneasiness from it.

He appears much reduced by the complaint, and is very feeble, the exertion of getting up and down stairs being extremely fatiguing. His natural habit is spare and lean, and rather tall in stature, his usual weight about 12 stone, and he thinks the last time he was weighed, when in supposed health, it amounted to 11 stone four pounds.

Those complaints are at least of three years standing; and from some circumstances it is not unreasonable to suppose the disease has been of longer duration. He has had these many years strictures in the urethra, which are now so little troublesome to him that he has not used a bougie for some time—however he passes his urine in a very small stream, and often by dribblets.

His appetite has been very keen and voracious; but these last three months, though he could eat heartily, yet the desire has not been

been so vehement. His thirst has been also very excessive, but as the appetite, has been lately more supportable, the quantity of urine has varied, being never less than 10 or 12 pints, but oftener a vast deal more, and the desire to pass it has always been urgent.

The disease was for some time undetected, as the very violent headaches with which he had been affected had engaged all the attention, and the state of the urine was overlooked, as the increase of it was supposed to depend on the quantity of liquids drank, though the headach was imagined to arise from a weakness of, or some fault in the stomach.

He has been subject to the piles, which have occasionally been very troublesome, and bled, but not lately. He never had gout or gravel.

He was in America during the American war, and very actively employed. Since that period he has been accustomed to a  
great

great deal of exercise, and always to a variety of rich food, and the best wines, and though he has rather indulged freely in both, yet not irregularly so, nor has he ever been sensible of any particular keenness in eating, although he always eat and drank heartily, as a person subjected to much exercise in labour generally does.

He has been accustomed to chew tobacco, and sometimes in pretty considerable quantity, and which he still continues.

Has the tobacco had any effect in moderating the disease, and in place of an acute termination has brought it to a chronic state?

He has been under the care of Doctors Warren, Turton; Frazer of Bath; has consulted Dr. Marshall; and more lately Dr. Meik, of Portsmouth; indeed he came to Woolwich from his immediate charge. A variety of remedies have been used. Bitters, chalybeates, alum, terra japonica, and the last were bark and acid of vitriol. He  
has

taken emetics, and which always relieved him.

The diet uniformly proposed and adopted, was whatever he chose, giving however the preference to light nutritious food. He was allowed fruit, and he drank wine, cyder, porter, and beer. His wine lately has been principally port, though he has sometimes drank old hock. His common daily quantity of wine ranging from a pint to a bottle.

*Remarks.*

The only variations in this Case from that of Captain *Meredith's*, seem to consist in the patient being of a greater age, the disease of longer duration, in his being free of pain at the stomach, and in having less thirst, appetite, and hectic heats—the Case giving a chronic state of the disease, while the Captain's was acute, and which probably would have rapidly terminated in death, had it not been at the time it was, treated by the new plan of cure.

The



The previous habits of life in this Case differ slightly from those of the first, and appear only to consist in having naturally no remarkable appetite, though possessing a more uniform opportunity of indulgence. The appetite however was always such as to allow a participation of variety in food, and he probably had a greater choice of wines, a more constant use of them, and in larger quantity.

In the former Case, the quantity of spitting of saliva is not specified, but in this Case it is mentioned as great and constant. On enquiry further of Captain *Meredith*, he says, that his spitting was also constant, and in great quantity.

In Dyspepsia a scarcity of saliva, and a defect of spitting, is held a corresponding mark of a deficiency of the quantity of gastric fluid; if so, the increase of saliva and spitting in Diabetes may equally denote an increased quantity of it. And the mawkish, sweetish,

sweetish, and sourish taste of the saliva and matter of the spittle partly arising probably in a direct manner from the stomach, may mark the vitiated state of the gastric fluid, though it does not actually mark the nature of such vitiation.

The state of the appetite in the present Case also shews the increased action of the stomach. And the headach, no doubt, has been, and is now, sympathetic of stomach affection.

From the duration of this disease we should suppose some change may have taken place in the kidneys, as the effect of the peculiar stimulus of the disease. If such change should be mere enlargement of capacity, those organs may gradually recover their natural state, at least so much so as not materially to interfere with their healthy action. In Captain *Meredith's* Case, the return of the kidneys to their apparent ordinary action was rapid and beyond expectation,

tion, and their continuing to separate the usual quantity and quality of urine, shews, that such action was absolutely healthful.

However, from the previous strictures in the urethra, and probably some affection about the prostate gland, or neck of the bladder, as well as the duration of the Diabetes, our hopes, though strong in the view of removing that disease, yet they are not so, with regard to a speedy return of a healthful condition of kidney. For independent of Diabetes, affections of the urethra, as I have stated, are in general when the complaints have been of any continuance, accompanied probably from sympathy of parts with such a state of the whole urinary organs as to give much distress. But we have no doubt that the cure of Diabetes will relieve the uneasiness our patient has suffered from this cause, for it has added much to the common grievance of an increased separation and discharge of sweet urine; the removal of which may therefore leave the parts and complaints arising from them in  
nearly

in nearly an ordinary state, and which will only require the usual means of cure.

Should the lacteal absorbents and glands, the kidneys, or stomach itself have undergone any morbid derangement of structure by the complaint, the restoration of perfect health will not be effected, although the peculiar disease might be removed.

The patient's extreme weakness, and the accession of oedematous swellings of the feet and legs denote the advance of what has been described as the last stage of the disease.

On the whole our prospects are not very sanguine, so far as the perfect restoration of health is concerned, and though from the experience of the former Case we are satisfied the saccharine matter and morbid action of the stomach may be removed, yet the sequela of the disease may be such as to prevent the return of perfect health.

*January*



*January 9th.*

Mr. *Cruickshank* visited the patient with me this morning, and we agreed to commence the radical treatment as pointed out in Captain *Meredith's* Case. An emetic of ipecacuan was therefore ordered in the evening, and a dose of castor oil to-morrow morning, with the adoption of the subsequent regimen.

The disease being of so long a duration, the patient so advanced in age, and there being no remarkable pain of the stomach or loins, blood-letting was not performed. Tho' we should have wished to have seen a little of the blood in order to have observed and compared its appearances, especially in a disease where, from its continuance, and the greater sweetness of the urine, it was probable more sensible sweetness might have been found in the serum.

*The Regimen.*

Equal parts milk, and beef or mutton decoction ;  
G

coction; soft boiled eggs or oysters, for *break-fast* and *supper*.

Saufages or black puddings made without seasoning or any vegetable matter, or brawn for *luncheon*.

Soups made with meat only and without seasoning or any vegetable matter, fat beef, mutton, pork, or game, which have been sometime killed; salmon or eels for *dinner*.

No seasoning or condiment of any kind to be used except a little salt.

For common drink water which has been boiled, milk and water, or the decoction of beef or mutton, which is to be thus prepared; take three pounds of fat beef or mutton and boil them with four quarts of water until reduced to one half, then strain the whole; the clear liquor is the decoction.

Whatever is eaten or drank to be in moderation, and rather with some restraint on gratifying

gratifying either, and nothing to be eaten or drank but what is above specified, except when very languid and feeling the want of wine, a little brandy may be added to the water.

Absolute confinement to the house to be adopted, and as little exercise in it as possible. Living in the same room with the windows and doors unopened to be preferred to the frequent changing from one part of the house to another—however a room with company in it is always to be enjoyed.

*Remarks on the Regimen.*

The allowance of brandy was granted more to satisfy fears entertained by the patient and his friends, than that it appeared either necessary or proper. On the contrary, it interfered a little with our views; but it was the safest thing we could allow.

The milk, though approaching to vegetable matter, and containing sugar, yet to

furnish a little variety for breakfast and supper, it was allowed, but in a mixed state with a fat or greasy animal decoction. Eggs and oysters were permitted on the same principle, as it was thought necessary, in the present Case, to offer a diet which would somewhat reconcile to the great change of living recommended, and it seemed to have its effect, as our patient entered upon it without reluctance. In other circumstances, old animal fats and meats ought to be preferred and used, as they would probably sooner remove the disease by destroying the action of the stomach, as well as preventing the formation of sugar.

### *The Urine.*

The quantity of urine collected in the last 24 hours, was about 10 pints; it was of a very light straw colour, of a fragrant flavor, and of a very sweet taste. Thirty-six ounces, troy-weight, were evaporated by Mr. Cruickshank, and it yielded three ounces, one drachm and ten grains of a residuum apparently



apparently more saccharine than that of Captain *Meredith's*, and 10 grains heavier, but having the other resemblances.

Two ounces of this residuum was treated with four ounces of the nitrous acid diluted with an equal bulk of water, and it afforded a large quantity of oxalic acid—the liquor which did not shoot into crystals had the perfect smell of honey.

A quantity of the same residuum was exposed to heat in a retort; the first product was evidently acid, but on the addition of potash the smell of ammonia could be perceived—the last matter was manifestly alkaline, and mixed with a little empyreumatic oil. The ammonia did not come over in a disengaged form until the bottom of the retort became red hot, and the quantity on the whole was very small.

*The Weight of the Body.*

He weighs nine stone, four and a half pounds, and from this, compared with his

G 3

last

last weight, when in supposed health, it appears he has lost by the disease about two stone.

10th.

*Morning.*—Slept more, and on the whole has had a better night than he has experienced these two years, made water only thrice, whereas he had usually done so six or seven times, the quantity about a quart, is higher coloured, cloudy, and evidently less sweet, and has a slightly urinous smell. Pulse 94; skin moist; thirst less. Has taken the castor oil, which has produced a more foetid stool than ordinary.

The emetic had operated well, but fluid and slimy matter were only thrown up, of a fourish taste, and at one time about a wine glassful of a glairy viscid matter, having a peculiarly acid taste, and which he recollects to have thrown up before during the operation of an emetic.

Drank

Drank no wine yesterday, and after dinner was not sensible of any inconvenience; on the contrary thought he felt more comfortable. On recollection, he had not abstained a day from wine for 15 years before, and at that time, in the Island of Jersey, he left it off for several months.

*Evening.*—Pulse as in the morning, the skin continues soft, has very little thirst, and has not made above three fourths of a pint of urine since the morning, which has rather a wheyish than sweetish taste. Has had another stool. He feels a good deal of uneasiness in his loins, though not differing from what has usually occurred—his head-ach remains, though in a slighter degree.

At dinner he felt very languid and as if he wanted wine; a spoonful of rum was given in milk.

*Remarks.*

The moist skin which has been induced, and which continues, shews the dependence

of every symptom of this peculiar disease on the stomach.

The changes in the urine, as well as in the state of thirst and skin, following so speedily the adoption of the approximate regimen, explain more satisfactorily our views of the disease, than even Captain *Meredith's* Case, as the treatment in it was more complex—the emetics and castor oil, however, especially the former, may have had some influence.

The sourish taste of the whole matter thrown up, shews the state of the stomach unfavourable to animalization and putrefaction.

The glairy viscid fluid thrown up, with the peculiarly acid taste, was probably a portion of the gastric fluid in its singularly changed state.

11th.

A tolerable night, but did not sleep so much as the night before, made water in  
the



the course of it thrice, and in appearance much higher coloured, cloudy, and of a more urinous smell, imparting no sweetish taste, and having the common saline taste of urine. Pulse 84, skin moist. To continue the diet, but to discontinue the rum or brandy, as he now feels he can do without either.

*Quantity of liquids taken last 24 hours,  $2\frac{1}{2}$  pints.*

*Quantity of urine made in ditto,  $2\frac{1}{2}$  ditto.*

12th.

A good night—the urine in appearance and quality the same as yesterday, and he can now retain it comfortably, having lost the uneasy and sudden propensity he often had to make it. Pulse 84, skin cool and soft; the flushing of the face gone. He continues more chearful, and fancies himself stronger. No stool.

*Quantity of liquids,  $3\frac{1}{2}$  pints.*

——— *urine,  $3\frac{1}{4}$  ditto.*

*Remarks.*

*Remarks.*

From the quantity of urine being less than the quantity of liquids taken, exclusive of the solids, it is not unreasonable to suppose assimilation and nutrition are already going on.

The General not being in his own house, it is impossible to ascertain the ingesta and egesta completely—the liquids either way, however, is pretty accurately ascertained.

The house where the General resides is very large, the sitting, eating, and sleeping rooms are lofty, and altogether capacious; he has constantly moved from one room to another, and his own bed room being so large, measuring  $17\frac{1}{2}$  by  $20\frac{1}{2}$ , and 11 feet in height, gives no reason to suppose the lungs have much connection with this peculiar disease, and this is further confirmed by the sudden change produced by the appropriate diet, &c.

13th.

The night has been more restless, and in the course of it he made urine five times; it continues urinous in taste and smell, deposits a reddish cloudy matter, and has an oily substance floating on the surface. Skin cool and soft, though the pulse is 96.

Appetite yesterday and this morning keen. He expressed himself to Mr. *Cruickshank* and myself in such a way, regarding a little delay of dinner, as betrayed strongly the intenseness of the desire of eating, and an impatience of temper. He feels uneasy in the bowels, has taken the castor oil, but without effect, it is directed to be repeated.

*Quantity of liquids*,  $3\frac{1}{2}$  pints.

— — *urine*,  $3\frac{3}{4}$  ditto.

#### *Remarks.*

From the increase of urine the last 24 hours, and the keenness of appetite, though the urine remains apparently destitute of sweetness,

sweetness, that the increased morbid action of the stomach still continues, is clearly pointed out. We may therefore suppose, that though animal food completely adopted would destroy the saccharine process, it will not absolutely at the same time remove the stomach's increased action; however a continuance of it with fats might ultimately have this effect. Recourse must be had, therefore, to the hepatised ammonia.

14th,

Has had a good night, and during it made urine three times, in sensible appearances the same as yesterday. Has had two stools of a yellow colour. Skin cool and soft, with a little moisture. Pulse 84. Appetite still keen,

*Quantity of liquids,  $3\frac{1}{2}$  pints.*

——— *urine,  $3\frac{1}{4}$  ditto.*

Thirty-six ounces of this urine was evaporated, and it yielded of a residuum two ounces five drachms, having no sensibly sweet



sweet taste, but a sharp saltish one. The difference between the amount of this and the first evaporation being four drachms and 10 grains.

A quantity of this residuum being exposed to heat in a retort, the first products manifestly contained ammonia, and that in such quantity as to effervesce with muriatic acid—what came over afterwards consisted of much carbonate of ammonia mixed with animal oil.

*Remarks.*

The good night, the urine being again diminished, and the quantity less than that of the liquids drank, shew something may have been owing to the costive state in producing the quickness of pulse, and increase of urine yesterday.

The keenness of appetite continuing, shews that the increased action of the stomach is still morbidly great, though the experiment

periment with this day's urine points out the absence of saccharine matter. Therefore the present state of the disease may be considered as simply bulimial, and that the hepatized ammonia should be given gradually to its fullest dose.

From the desire of returning to his family as soon as possible, we shall lose no time in adopting fully the treatment, though under different circumstances we should have tried for a longer time the effect of a diet of animal food and fats.

15th.

Has had a good night with sleep, and when he awoke was sensible of a moisture on the skin, he made urine three times, and the whole voided in the last 24 hours had a more urinous appearance and smell, and deposited a small quantity of a reddish sediment, no clouds, or oiliness on its surface. The appetite has not been quite so keen, the gums have lost their puffiness and redness,

redness, the teeth do not feel on edge, and the loose ones have become firmer in their sockets.

Pulse 92, skin cool and moist. Had a stool yesterday.

He has begun the hepatised ammonia in doses of three drops three times a day, immediately before breakfast, dinner, and supper. The number of drops to be gradually increased, until the medicine produces nausea, giddiness, and a sensible reduction of the pulse.

*Quantity of liquids, 4 pints.*

——— — *urine, 3½ ditto.*

16th.

A restless night from a tickling cough; made urine three or four times, the urine in appearance as yesterday, but not so salt to the taste, appetite not so anxious, tongue white and foul. The œdematous swelling of both legs continue, and rather most in the

the left. Had one stool. Skin cool and soft. Pulse 80, measured by my friend Dr. Woollcombe, of Plymouth, who visited the patient with me to-day. He also saw Captain *Meredith*, and to him I am indebted for many valuable communications. He is fond of medical science, and being possessed of every necessary qualification, I know he will become equally one of its ornaments and improvers.

The hepatised ammonia has not produced sickness or giddiness, though the pulse is slower; the dose to be increased to four drops; and at bed-time to take a draught of antimonial wine, tincture of opium and water.

*Quantity of liquids,  $3\frac{3}{4}$  pints.*

—— — *urine, 4 ditto.*

*Remarks.*

Does the cough arise from accumulation in the stomach? Probably not;—but it may arise from the defect of digestion; as in acescent states of stomach, it is exceedingly common



common for particular substances to disagree, and then an acrid sensation, imparting the actual feel of the thing previously swallowed, ascends to the throat, affects the larynx, and excites a tickling cough; this I have often experienced, and as often found a few drops of laudanum and an alkali remove it.

Captain *Meredith*, about the time great changes appeared, and a few days after the entire adoption of animal food, had an attack of a bilious nature.

The excess of urine to-day seems to point out a little difference of some kind or other in the state of the stomach.

17th.

Has had a very good night, slept comfortably, and during it made water twice, the urine in smell and appearance more urinous, and in taste more saltish than yesterday—he makes urine more freely by the urethra than usual, so as to shew that the stricture

H

is

is less, the propensity and dribbling are also removed. The tickling cough is nearly gone. Has had two large foetid and lumpy stools with the castor oil. Tongue not so foul. Pulse 80; skin cool and soft.

Appetite this morning good, but not keen. The hepatised ammonia has not had any sensible effect on the stomach or head; it is therefore to be increased to five drops, and the draught repeated at bed-time.

*Quantity of liquids, 4 pints.*

——— *urine, 3½ ditto.*

*Remarks.*

From the large lumpy stools it is not improbable accumulation of the bowels may have been partly the cause of the cough and restlessness, though both were relieved by the opiate draught.

18th.

A tolerable night, had one stool, and several yesterday, which were offensive and accompanied

accompanied with griping; made urine once in the night, and it continues high coloured, with a reddish deposition. Has had a little headach, with inclination to sleep, and nausea, and has less desire for food. Pulse 86; skin cool and moist.

As the hepatized ammonia is evidently producing its effects, the dose is to be diminished to three drops. The draught at bed-time to be repeated with a few drops more of the tincture of opium.

*Quantity of liquids,  $3\frac{3}{4}$  pints.*

—— — *urine,  $2\frac{1}{2}$  ditto.*

*Remarks.*

The urine so suddenly diminishing in quantity in a disease of such continuance, and where the action of the kidneys has been so much increased, demonstrates how readily they may reassume healthy action, when the stimulus and sympathy maintaining their increased action are removed.

Captain *Meredith's* Case clearly evinces, that the kidneys were not deranged in structure, and that even their vessels were not so remarkably dilated as not speedily to recover themselves.

In the present Case, it may be supposed, from the age of the patient, and continuance of the disease, that the state of the vessels of the kidneys, if enlarged or otherwise affected, will require time to recover the healthy and natural condition. It is possible they may never entirely recover it. However from the present circumstances of the Case, it is extremely probable they may.

19th.

A very good night, and in the course of it made water twice, and of the same appearance as yesterday, except in having an oiliness on the surface. He has a nausea, and rather a disinclination for food, his tongue is foul, and there is a bitterish taste in the mouth. Breath offensive. He is drowsy, has a little headach, and appears  
disinclined

disinclined to any kind or degree of exertion. Pulse 84; skin cool and soft.

The hepatised ammonia was discontinued last night, as the headach, with a confusion of the head, as he termed it, were considerable. It has not been taken this morning, and it is to be discontinued for this day.

An emetic of ipecacuan is directed to be taken in the evening, and the draught at bed-time.

*Quantity of liquids, 3½ pints.*

——— *urine, 2½ ditto.*

*Remarks.*

The urine continuing so urinous, and so considerably diminished these two days, and the disinclination to food marking a less active state of stomach, there is reason to suppose the disease is nearly removed. From the oily appearance on the urine, the offensive breath, and disinclination to motion, the disease



disease may run, if not prevented by a change of measures, into scurvy.

20th.

A tolerable night, slept and perspired generally towards the morning, made urine twice in the course of the night, and of the same appearance, except in there being no oiliness on the surface as yesterday. Pulse 80; skin cool and soft, tongue cleaner; has still a little of the tickling cough.

The emetic brought up a quantity of viscid glairy matter, of a sourish taste; no portion of food was ejected; the operation was followed by two copious stools, one of which was lumpy, and both were black and offensive. The painful sensation and weariness of the back has not been perceptible these four days.

The draught to be repeated at bed-time with the quantity of tincture of opium augmented.

As

As the day is very fine, he is directed to walk out a little, and to-morrow to ride out a few miles in a chaise.

*Quantity of liquids taken,  $3\frac{1}{4}$  pints.*

— *urine made, 3 ditto.*

*Remarks.*

The effect of the emetic shews the presence of acidity still in the stomach, and the viscid glairy matter was probably part of the gastric fluid which may be also still in too great a quantity, and in an altered state.

Should another Case of Diabetes fall under our care, we would, at the commencement of the treatment, enjoin abstinence as long as it could be endured, then give an emetic, and the glairy viscid fluid thrown up should be subjected to chemical experiment, by which its nature might be somewhat ascertained.

21<sup>st</sup>.

Has had a tolerable good night, though the cough was occasionally troublesome; in

H 4

the

the course of it he made water three times, and it continues apparently urinous, but is without the oily scum. Had a considerable headach yesterday evening, but it is for the present gone. Eat breakfast without appetite; on the contrary he expresses himself as having a disinclination for food, and rather loathes it; no thirst. Pulse, as examined by Dr. Woollcombe, 86; skin soft and rather moist.

The draught to be changed at bed-time for one composed of the camphorated julep, and the tincture of opium.

Desired to continue the diet as usual, but without giving any preference to fat unless solicited by inclination. To ride out in a chaise.

*Liquids taken, 2½ pints.*

*Urine made, 3 ditto.*

Thirty-six ounces of this urine was evaporated, and it yielded one ounce seven drachms and 20 grains of a residuum, having

ing a saline bitterish taste, with some tenacity, and the smell was highly offensive and urinous.

*Remarks.*

The state of the stomach, as described to-day points out the accession of a very opposite one to that on which the disease depends.

Considering the age of our patient, and the continuance of the disease in wearing out his habit, the treatment must now be speedily though gradually changed.

The first step is exercise in the air, the next will be the use of bread.

The result of the evaporation of a portion of the last day's urine, connected with the state of the stomach, is conclusive of the removal of the Diabetes, and the disposition to assimilation and health.

The changes in the quantity of the residuum in the different experiments is extraordinary, as being so quickly produced.

The

	oz.	dr.	grs.
The urine of the 9th yielded	3	1	10
of the 14th ditto	2	5	10
of the 21st ditto	1	7	20

A difference between the last and the first of no less than 1 oz. 1 dr. and 50 grains. On comparing this with the result of Captain *Meredith's* urine, it will be found, that a similar quantity produced 1 oz. and 4 drachms, a difference of 3 drachms and 20 grains only. It may be also observed, that comparing it with the residuum of my urine, (see the same Case, December 6) there is only a difference in weight of 1 dr. and 20 grains in the same quantity; therefore our patient's urine of to-day differs little from healthy urine in the amount of the matter yielded on evaporation, and as the experiment has shewn, of a matter nearly similar.

A patient of 57, with a disease of upwards of three years continuance, commencing a treatment which in twelve days produced



duced such appearances, as to justify the hope of a very rapid restoration of health, exhibits an example not commonly met with in the practice of medicine.

22d.

A good night, cough not being troublesome, and made urine twice, of a natural colour and smell; has had less head-ach. Eat breakfast this morning with an appetite. Pulse 92, but skin soft and moist. Has had a large black stool.

The ride yesterday continued three hours, and was extended above 12 miles, which was much further than intended, however he bore it tolerably.

The draught to be omitted; and to persist in the animal food diet, but to select the articles agreeable to inclination.

*Liquids taken, 2½ pints.*

*Urine made, 2 ditto.*

*Remarks.*

*Remarks.*

The appearances of to-day corroborate our hopes of a speedy restoration of health; they mark for the present the absence of the disease.

The oily scum on the urine having disappeared, and there being less disinclination to eat, point out a disposition favourable to returning health, but it must be restrained by cautious management, and kept at the healthful standard. Much, indeed all, will here depend on the patient's steadiness.

23d.

Cough troublesome in the night; made water twice. Pulse 84, skin soft, no thirst. Felt very comfortable after the ride yesterday.

The mutton and beef decoction to be omitted, and to take the milk alone. The draught to be repeated at bed-time.

*Liquids taken,  $3\frac{1}{4}$  pints.*

*Urine made,  $2\frac{1}{2}$  ditto,*

24th,

24th.

A good night; the cough began as usual, but soon ceased after taking the draught; during the night made water twice, and of the same urinous appearance. Had two stools yesterday by the castor oil, and two loose ones this morning without any medicine. Pulse 80; skin cool and soft; the countenance assumes a healthy aspect, and looks fuller; he is sensible of more strength. The swelling of the legs is diminished. Rode in an open carriage yesterday. The draught to be repeated.

*Liquids taken*,  $3\frac{1}{4}$  pints.

*Urine made*,  $2\frac{1}{4}$  ditto.

25th.

An easy night, and in the course of it made water thrice. Pulse 80; skin cool and soft. A short ride yesterday. In place of the draught at bed-time, to take two teaspoonfuls of the camphorated tincture of opium in a wine glassful of water.

*Liquids taken*,  $3\frac{1}{2}$  pints.

*Urine made*,  $2\frac{1}{2}$  ditto.

26th.

26th.

The cough troublesome in the night, and is still so this morning; to take a tea-spoonful of the camphorated tincture of opium every three or four hours, and three at night; there is no expectoration with the cough, he says it is dry and tickling. A natural looking stool this morning. Rode yesterday.

*Liquids taken*, 3 pints.

*Urine made*, 2½ ditto.

*Remarks.*

The urine continuing in a quantity not exceeding what usually occurs in ordinary health, the uneasiness and weariness of the back not returning, the propensity to make water, and the dribbling having sometime ceased, and the urine being voided in a freer stream, point out two circumstances of great consequence to the future prospects of our patient, and convey to us great satisfaction. They shew the kidney has not been so deranged, but that a healthful condition of it may return, which in a certain degree

gree has already taken place, and that in a little time it is reasonable to expect it will not only become completely so but remain. They also lead to a well-grounded hope that the previous affection of the urethra will not be so distressing as might have been imagined. (See remarks on the 8th and 18th.)

*27th.*

Has had a very good night, the cough not being troublesome. Has had a dark coloured stool. Pulse 78; skin cool and soft; the swelling of the legs gone. He expresses a strong desire for bread; to be allowed it to-morrow in the quantity of two ounces at breakfast, luncheon, dinner and supper.

To repeat the camphorated tincture of opium.

*Liquids taken, 3¼ pints.*

*Urine made, 2¼ ditto.*

*28th.*



28th.

A very good night, and during it made water thrice, tongue clean, and of rather a bright red colour; began the bread this morning, and eat his breakfast with a good appetite. Pulse 84; skin cool and soft. To take his medicine as usual at bed-time.

He weighed 9 stone 5 pound 2 ounces to-day, having gained 10 ounces.

*Liquids taken*, 3 pints.

*Urine made*, 2 $\frac{1}{4}$  ditto.

Thirty-six ounces of this urine was evaporated, and it yielded a residuum weighing 2 ounces 5 drachms, being an increase since the last experiment of 5 drachms 40 grains; and the residuum, though of a very offensive urinous smell, with a bitter saline taste, and without sweetness, had a treacly appearance, and was tenacious.

Half an ounce of this residuum was introduced into a glass vessel, to which was  
added

added half an ounce of concentrated nitrous acid, diluted with a little better than an equal quantity of water, a violent effervescence took place, and much nitrous gas was disengaged; after the action had ceased, and the mixture become cold, it was found to have deposited a great quantity of slender shining scales, resembling the acid of borax.

These scales, when pressed between the fingers, had a smooth greasy feel; they did not appear to assume any determinate figure, although, being much more soluble in hot than cold water, they were readily deposited by cooling; they dissolved in the sulphuric and muriatic acids without commotion, and the former was not rendered black; with the nitrous acid they produced an effervescence; they were sparingly soluble in alcohol, and when repeatedly washed with this fluid still retained acid properties and reddened the syrup of violets; they combined with the mild alkalies with effervescence,

vescence, and formed very soluble salts, whose properties were not investigated; their solution in water did not precipitate lime water, nor the muriates of lime, or barytes, nor the nitrates of silver or mercury, in any sensible degree, nor sulphate of iron, they did not therefore contain phosphoric or oxalic acid; when thrown upon a red-hot iron they melted, boiled up and evaporated in white smoke, leaving a very small quantity of a charry residuum, not difficult to incinerate; the vapours which escaped did not readily catch fire like those of the oxalic acid under similar circumstances. From these experiments it would appear that the scales form some unknown animal acid, produced by the action of the nitrous acid on this urinous residuum. In some of its properties it resembles the lithic acid, but in others differs from it essentially, particularly in its ready solubility in water and the muriatic acid.

*Remarks.*

*Remarks.*

Such an increase in the quantity of animal matter separated by the urine, being so much greater than the result of the experiment of the urine of the 21st, only seven days since, and though no saccharine matter has been found, marks some change in the stomach, and we have probably been deceived. A simple increase of action by brandy and water, or eating something improper, though not amounting to the actual reproduction of saccharine matter, may be the causes; however nothing has been detected, except what the urinous residuum has shewn.

The redness of the tongue, as noticed in this day's report, and the appetite for breakfast, denoted a state of stomach rather inauspicious.

The difference of weight is somewhat favourable to the idea of returning assimilation and nutrition, but it is less than we expected.

29th.

On the whole has had a tolerably good night, but awoke with a dribbling of urine, which surpris'd and affected him, as putting him in mind of his wonted distress. The urine is light coloured, and sensibly sweetish. Appetite yesterday good and rather keen; tongue of a florid red; some thirst, and a return of the spitting. Pulse 86; skin cool and soft.

Eat yesterday mutton hashed with onion and cabbage pickle, and his allowance of half a pound of bread. On enquiry, it was found he had eaten on the 26th minced veal, thickened with flour, and some hashed hare; any further use of vegetable matter, or the use of brandy or rum, was not acknowledged, though suspected.

The bread and every species of vegetable matter to be laid aside, and to use the animal food and fats, as at first strictly directed; and he is to take three drops of the hepatised ammonia four times a day as formerly.

He



He is to confine himself to the house. The camphorated tincture of opium to be repeated at bed-time.

*Liquids taken,* 4 pints.

*Urine made,* 4 $\frac{1}{4}$  ditto.

*Remarks.*

From this day's report it will be seen, that we were too sanguine in our expectations, with regard to the speedy restoration of health. The disease has been reproduced, and, as in Captain *Meredith's* case, evidently by a deviation from the animal food to vegetable matter, though probably with the addition of something else, could it have been ascertained.

Such deviations, however, would not probably have reproduced the disease, had the increased action of the stomach, or the disposition to its return been removed.

An important theoretical, as well as practical point is completely established by this  
I 3 reproduction,

reproduction, namely, that the disease depends on an increased morbid action of the stomach, and that the removal of this, as well as the prohibition of food or drink capable of affording saccharine matter, constitutes the principles of rational and successful treatment. To prevent then the formation of sugar, and remove the morbid action of the stomach, were the objects of the practice directed this day.

The return of the disease also confirms our former suppositions, viz. that the increase of the quantity of urine depends on the peculiar stimulus of the saccharine matter, and on sympathetic affection of the stomach with the kidneys, when its action is morbidly increased.

It likewise serves to shew, that the floridness of the tongue, and spitting, seem criterions of the state of the stomach, and gastric fluid, as they have returned with the disorder; and that the lungs and skin have  
probably

probably little or no share in the complaint.

The importance of a chemical examination of the urine, in ascertaining correctly the state of the disease, has become evident, and ought never to be dispensed with. But as every medical man may not be sufficiently chemical, or have the advantages we have had of the co-operation of an expert and intelligent chemist, we would recommend the simple evaporation of the urine at the commencement of the treatment, and of the same process frequently during its progress; for in this way a tolerably accurate state of the complaint, or convalescence from it, will be obtained.

30th.

Has had a good night, and during it made water thrice, with less dribbling, the urine is not sensibly sweet this morning, and it has a sandy deposition. Had a stool yesterday, and one this morning. He is thirsty, with a foul tongue and slight sick-

ness, and he felt his appetite for breakfast rather less than for some mornings past. Pulse 84. Skin moist.

To continue the hepatifed ammonia, diet, and medicine at bed-time.

*Liquids taken*,  $4\frac{1}{4}$  pints.

*Urine made*,  $3\frac{1}{4}$  ditto.

*Remarks.*

The very sensible diminution of the urine in the last 24 hours, especially when it is considered the quantity is less than the quantity of liquids drank, and that the properties of it are evidently changed, with the alteration in the state of the appetite and tongue, illustrates the nature of our disease.

31<sup>st</sup>.

A tolerable night; tongue moist, no thirst to-day, the spitting, however, continues; skin cool and soft; pulse 86. The urine is high coloured, very saltish in taste, and deposits more of the lateritious sediment. He  
now

now takes four drops of the hepatified ammonia as a dose. To continue diet, and medicine at bed-time.

*Liquids drank, 4 pints.*

*Urine made, 3½ ditto.*

*February 1st.*

An easy night. Has had two stools with castor oil. Urine as yesterday, and smells of hepatic gas. Complains of nausea and head-ach. Pulse 86. He takes five drops of the hepatified ammonia as a dose. The diet and other medicine to be repeated.

External pressure gives pain to the stomach, where he has occasionally a dull heavy sensation, as of a weight acting on it. For some time past he has been sensible of a soreness on touching the belly, and in the situation of the stomach especially: but he would not have thought of either had I not enquired, and pressed this morning



ing on the region of the stomach with my hand.

*Liquids drank*,  $4\frac{1}{4}$  pints.

*Urine made*,  $3\frac{3}{4}$  ditto.

*Remarks.*

Suspecting the existence in this Case of enlarged lacteal absorbent glands, or some alteration in the stomach's structure, generally or partially, from the long continuance of the disease, I for the first time examined by pressure the stomach and belly, and there seems reason to imagine the suspicion may be well-founded. Not, however, that we suppose they will prevent the cure of the disease, as we have already witnessed its removal, but they certainly may prevent the entire re-establishment of his former health.

Should the stomach be morbidly changed in its structure, it must probably be general, at least there is no symptom of its being about the pylorus or cardia particularly, though the sensibility of the latter may be increased,

increased. May not the pancreas be morbidly deranged? Dissection has noticed only mesenteric glands as being enlarged, and some change from the natural appearance in the kidneys. The whole, however, may be set down as the sequelæ of the primary affection of the stomach.

The tickling cough which he now has, and has had for some time past, may probably depend on some affection of bronchial vessels and glands, produced by the continuance of the disease.

Though some change in the structure of the kidneys might likewise in this case have been supposed, yet from the cessation of uneasiness in the loins, and the diminution of urine at one time to two pints, we may deem it probable, there is no affection of them but what may be gradually removed.

*2d.*

A very good night; made water twice, of the same colour, but much saltier in taste,  
and

and depositing the red sand, it does not smell of the hepatic gas. Has had a large stool. Eat his breakfast with less relish, and has a slight nausea. Skin cool and soft. Pulse 100. Has just finished the writing of some letters, in a quarter of an hour after the pulse fell to 80. Takes six drops of the hepatised ammonia three times a day; the diet and camphorated tincture of opium in the dose of four tea-spoonfuls to be continued at bed-time.

*Liquids drank*,  $2\frac{3}{4}$  pints.

*Urine made*,  $2\frac{1}{4}$  ditto.

*Remarks.*

The increase of the pulse under the circumstances in which it arose, marks a very irritable and susceptible habit.

*3d.*

A good night and very little cough; urine very salt in taste, high coloured, and deposits more sand. Eat his breakfast without dislike, and has no nausea, spits less, has no thirst, and the dribbling is gone; swelling

ling of the feet hardly perceptible. Had four stools yesterday, with griping, which still continues. Pulse 80; skin cool and soft.

On handling the region of the stomach this morning, as I found him in bed, he felt a forenefs, which I also imparted to him on preffing the pit of the stomach.

He takes feven drops of the hepatifed ammonia, and continues his other medicine.

*Liquids drank*,  $1\frac{3}{4}$  pints.

*Urine made*, 2 ditto.

4th.

A very good night, and in the courfe of it made water only once, the urine is high-coloured, fmells ftrongly, and deposits much fand, which forms a cruft on the bottom and fides of the veffel.

The tongue has loft its rednefs, and acquired a general pale colour; cough much lefs;

less; pulse 72; skin cool and moist. He disliked breakfast, has a slight griping, and had two stools yesterday. No head-ach, but feels a little giddy and drowsy.

Takes eight drops of the hepatised ammonia. Expressed a wish for cheese; it is allowed.

*Liquids drank*,  $2\frac{1}{4}$  pints.

*Urine made*, 2 ditto.

#### *Remarks.*

The appearance of the urine, and its diminution to about the natural quantity for three days past, the state of the tongue this morning, and the fall in the frequency of the pulse, point out the approach to a state of stomach favourable to the entire removal of the disease; the only untoward circumstance remaining is the still existing desire for food, or rather in having no aversion to it.

#### *5th.*

An indifferent night from the tickling cough; made water in the night once; had  
three



three stools this morning with castor oil. The urine of the last 24 hours high coloured, and having the sandy sediment and crust, and a considerable oiliness on the surface. Takes nine drops of the hepatised ammonia. Pulse 82; skin cool and soft.

*Liquids drank, 2 pints.*

*Urine made, 2 ditto.*

*Remarks.*

The oiliness on the surface of the urine engages attention, as it always precedes or attends the opposite state of stomach to the diabetic.

*6th.*

A very good night, slept nearly the whole of it, and only made water once. Urine as yesterday, but has no oiliness on its surface. Had a stool of a strong hepatic smell. Pulse 80.

Eat salt fish for dinner yesterday, which excited thirst: is dissuaded from again eating it.

Takes

Takes 10 drops of the hepatifed ammonia. Is directed to take a spoonful of melted mutton suet in a little of his warm milk, at breakfast, luncheon and supper. The camphorated tincture of opium to be continued and increased.

*Liquids drank, 3 pints.*

*Urine made, 2½ ditto.*

*Remarks.*

The absence of the oily scum from the urine, and its increased quantity, has been owing to the augmented action produced by the salt fish on the stomach, and consequent thirst.

*7th.*

A tolerable night. He has had five stools, with griping, since yesterday's report, all of ~~whom~~ were offensive, but of a lighter than usual colour. From those evacuations he has not the feel of weakness which might have been expected. Complains of being very giddy and drowsy, and has much nausea,

sea,

sea, and though he eat his two eggs for breakfast, it was not with his usual appetite, on the contrary with rather a dislike to it. Pulse 80, and feeble. Skin moist in the night, and is so this morning.

Has taken 12 drops of the hepatised ammonia, but they are to be discontinued. It was discovered he eat some horse-radish yesterday, and he was requested not to repeat it. Continues the camphorated tincture of opium at bed-time.

*Liquids drank,  $2\frac{1}{2}$  pints.*

*Urine made, 2 ditto.*

NOTE.—The actual measure of urine did not exceed a pint, but the other pint was allowed for the quantity voided with the stools; and in the same manner we have calculated all along.

#### *Remarks.*

The symptoms of this morning evidently pointing out the effects of a full dose of the

K hepatised

hepatifed ammonia, it has been discontinued; and there is reason now to hope that state of stomach has been induced, which is unfavourable for the continuance of the disease; but it must be maintained, and the only caution requisite will be to prevent it from running into an opposite condition.

8th. Much as yesterday. Pulse 84, and feeble; skin cool and moist; the tongue is clean but of a pallid colour, and so are the gums; the teeth look fallow and foul, and are disposed to fur.

Continues the diet, and medicine at bed-time.

*Liquids drank,* 2 pints.

*Urine made,* 2 ditto.

9th.

A tolerable night, made water once during the course of it. The urine the same, but has deposited more sand and crust. He is anxious about getting home.

Began

Began again the hepatifed ammonia in three drop doses, to be taken three times a day. To continue the diet, and medicine at bed-time.

*Liquids taken,*  $2\frac{1}{4}$  pints.

*Urine made,*  $1\frac{3}{4}$  ditto.

*Remarks:*

As our patient has expressed a strong wish to know when he may go home, we have ventured thus to promise, that the urine should be chemically examined by Mr. Cruickshank on the 11th, and if the result was favourable, he should be allowed to use carriage exercise again on the 12th, to continue the same diet and medicines until the 18th, when his urine should be again examined and himself weighed, and should the results justify it, to be allowed bread; and on the 25th, another weighing and examination of urine, the issue of which continuing favourable, he is to return to Portsmouth on the 26th, making a period of seven weeks from his arrival here.



We have thought it proper to state this arrangement as connected with prognostic, though arising from the solicitude of the patient.

10th.

As on the 9th. Pulse 76. A stool of a light yellow cast. Continues the hepatified ammonia in doses of three drops, diet, and medicine at bed-time as before.

*Liquids drank,  $2\frac{1}{2}$  pints.*

*Urine made,  $1\frac{3}{4}$  ditto.*

11th.

A good night; had a stool of a brimstone colour and costive; pulse 84; skin rather warm, and there is a little flushing, just as if he had taken some warm brandy and water, which I understand he has not. The cough is more troublesome.

Takes the hepatified ammonia four times a day, in doses ranging from three to five drops.

drops. The same diet, and medicine at bed-time.

*Liquids taken,*  $2\frac{1}{2}$  pints.

*Urine made,*  $2\frac{1}{2}$  ditto.

Thirty-six ounces of this urine was evaporated, which afforded 2 ounces 7 drachms and 35 grains of a dark brown residuum, of some tenacity, a very urinous smell, and a pungent, saline and bitterish taste.

A portion of this residuum was treated with an equal weight of nitrous acid, and the same scaly appearances were formed as by the experiment of the urine of the 27th and 28th January. The scales were found to be exactly the same.

A portion of the residuum was introduced into a retort, and exposed to a graduated heat, the first portions which came over were strongly alkaline, and towards the end of the process, a quantity of concrete ammonia sublimed into the neck of the retort.

*Remarks.*

The very light colour of the stools these two days points out some kind of change in the digestive process.

The quantity of urine is three gills more than yesterday, and the pulse is increased eight pulsations in the minute, and there is a flushing and more than usual heat.

Though the residuum of this day's urine obtained by evaporation has been found to contain no saccharine matter, it shews too great a proportion of animal matter, and salts to denote healthful assimilation. The total weight of the residuum gives nearly the result of the whole of the urine voided in 24 hours, of course there is now a material difference in the daily waste, from what took place at the commencement of the treatment, as is shewn by comparing the present with the first experiment. See 9th January.

The

The quantity of animal matter as produced by the evaporation of the urine of the 21st January, being nearly that of health, furnishes a proof that the present increase of it does not probably depend on any irremediable derangement of stomach structure, or any morbid condition of lacteal vessels and glands produced by the continuance of the disease.

The light coloured stools, the heat and flushing, the increase in the pulse, in the quantity of urine, and the animal matter found in it, and probably we may add the augmentation of the cough in the afternoon, marking some change unfavourable to our prospects, our suspicions of some improper deviation were excited, but we could not obtain any satisfaction. We hinted at brandy or rum, as it had in small quantity been once allowed, but the use of neither was acknowledged, nor any other thing apparently producing the change.

As he is uneasy about his confinement, the riding in a carriage is to be continued; but the action of the stomach is to be further reduced by the hepatifed ammonia; to assist which, as well as to alleviate the cough, a combination of opium with ipecacuan is to be given in place of the camphorated tincture of opium, in the following form:

R Pulv. Ipecac. ʒss.

Opii ʒi

Sapo Venet. a ʒi f. Pil. No. 60.

Two of which are to be taken at bed-time, and when necessary, one in the course of the day.

Though the hepatifed ammonia diminishes the action of the stomach, and in large doses that of the whole system, yet it does not seem to possess such anodyne power as to preclude the use of opium.



12th.

A good night; made water once; has had a copious stool by castor oil this morning, of a natural appearance and colour, though rather of a lighter yellow and firmer consistence. Urine high coloured, depositing a good deal of the red sand, and has much oiliness on its surface. Pulse 84; skin cool and soft. There is a little cough since he got up, with slight pain of the breast.

He takes the hepatized ammonia in four drop doses. The same diet. A piece of flannel smeared with hartshorn and oil to be applied to the breast, one of the opium pills with ipecacuan to be taken before dinner, and two at bed-time. Rode out yesterday.

*Liquids drank,  $2\frac{1}{2}$  pints.*

*Urine made,  $2\frac{1}{4}$  ditto.*

### *Remarks.*

We hope the suspicion suggested yesterday will have a permanent good effect, as it seems to have already produced a change.

13th.

13<sup>th</sup>.

A very good night, no cough, and it has not returned this morning; has had a stool of the same nature. Urine in appearance as on the 12<sup>th</sup>. Pulse 84. Skin cool and soft. Rode out yesterday.

The hepatifed ammonia and pills to be continued.

*Liquids drank*,  $2\frac{1}{2}$  pints.

*Urine made*, 2 ditto.

14<sup>th</sup>.

A good night, no cough, made water once, had a stool yesterday and three this morning, without castor oil, which were offensive and of a whitish colour. Urine lighter coloured and oily, smelling of the fuet. Pulse 84; skin cool and soft, no thirst. Appetite neither keen or loathing. Rode out yesterday.

Continues the pills and hepatifed ammonia; the mutton fuet to be omitted.

*Liquids*

*Liquids drank*,  $2\frac{1}{2}$  pints.

*Urine made*,  $1\frac{3}{4}$  ditto.

*Remarks.*

The stools having become of a light brimstone colour since the use of the mutton suet, and the urine being very oily to-day, and smelling of the suet, it is omitted, to ascertain whether those appearances depend on it.

There is reason to suppose a deficiency of bile, from whatever cause it may proceed; for besides the light colour of the stools, there is no yellowness of the eyes, or even that high saffron colour of urine which takes place when the bile is sufficiently secreted, but prevented from passing into the intestines.

Perhaps it is the fats which are not assimilated and run off by the urine, that gave the last increase of quantity in the residuum.

On

On this supposition, as his stomach is now in a sort of negative state with regard to power, other animal fats, as well as the fuet, will be discontinued. But this will remain undecided until the effects of leaving off the mutton fuet are perceived.

What is the state of urine in scurvy?

So far as I recollect, no chemical examination of the urine in that disease has been made.

15th.

A good night, made water once, urine not so oily; has had this morning three stools, of a darker and more bilious colour, feels languid, appetite the same; he is very desirous to have some brandy and water, indeed he has become extremely impatient, as he alledges the disease is gone, and he never will get strength without a cordial and bread. As we had our doubts that deviations had pretty frequently occurred, we  
thought

thought it better to give a sanction, in hopes it would restrain, and he was allowed weak brandy and water, and in two days after to begin with four ounces of bread daily. Pulse 84; skin cool and soft.

Fats to be avoided, and only the lean parts of meat to be eaten. The hepatified ammonia to be discontinued. The pills at bed-time to be repeated, and when he has occasion for an aperient medicine, one or two of the following pills in place of the castor oil.

R Aloes ʒij.

Sapo Venet. ʒi fi. Pil. No. xlv.

*Liquids drank*,  $2\frac{1}{2}$  pints.

*Urine made*,  $1\frac{1}{4}$  ditto.

*Remarks.*

The change in the colour of the stools since leaving off the mutton suet, makes it probable there was somewhat depending on  
its



its use, and for which the other fats are directed to be avoided.

From the frequency of the stools, which our patient insists upon weaken him, though they are of such a nature that they appear to have been necessary, the hepatised ammonia is to be discontinued, as it very likely has an effect in producing them.

Though there is reason to hope, from the long continued absence of the saccharine matter in the urine, its diminished quantity, and more natural appearance, with the negative appetite, that the changes we have been prevailed upon to adopt in the regimen will not reproduce the disease; yet had it not been for the extreme impatience of the patient to-day, we intended to have persevered some days longer before we allowed bread, and brandy or other spirits were not to be at all proposed, at least for sometime to come.

Brandy,

Brandy, or any spirit, however, does not interfere with the principles of treatment so far as the prevention of the formation of sugar is concerned; but we have always been afraid of it on account of the action of the stomach, as tending to increase it, at least one thing is certain, that spirits and water frequently increase the quantity of urine, and we fear they have been, unknown to us, operating in some degree against our measures.

It may be further observed, that Diabetes Mellitus and Scurvy, being supposed two opposite states of disease, and requiring very different remedies, grog should rather prove a sort of remedy in the Diabetes, as Dr. Trotter has observed it contributes to the production of Scurvy.

16th.

An uneasy night, from griping with loose stools, and he has had four this morning, besides three yesterday afternoon, of a dark colour and offensive smell. Pulse 84, skin rather

rather warmer than usual, no thirst or cough, urine high coloured, and depositing much sand and crust.

He is directed to take 20 drops of a mixture, consisting of two parts of the water of pure kali, and one of tincture of opium, every four hours until easier. The pills with opium and ipecacuan to be discontinued, and also the milk. To take weak brandy and water warm for drink, in the proportion of two table-spoonfuls of the former, to half a pint of the latter, or beef-tea.

*Liquids taken,  $1\frac{1}{2}$  pint.*

*Urine half a pint,* but allowing for what was mixed with the stools, the whole is estimated in the 24 hours at  $1\frac{1}{2}$  pint.

*Remarks.*

Not being able to satisfy ourselves with the cause of the griping and frequent stools, except on the supposition of having eaten something improper, and not being able to discover it, we felt some difficulty; however,  
on

on our suspicions of some acidity, we gave him an alkali joined with an opiate.

In the course of the day we were informed he had eaten some fruit (shaddock) on the 14th, since the evening of which he had been griped, though this was not acknowledged until the morning of the 16th. This was an important discovery, as it explained two points, one of which was extremely essential, namely, that the disease was not only removed, but very likely the disposition to it, as it was not reproduced by acid fruit, to which the purging, with griping, was owing, and of course the alkali with opium would soon remove it. It may, however, be suggested that this circumstance does not decidedly mark the removal of the disposition to the disease, as it only proves mere acid will not reproduce it; for it requires vegetable substances, or mucilage, to form saccharine matter. But at any rate, the fears we had entertained of the probable accession of a serious state of bowels from the long conti-

L

nuance

nuance of the disease were lessened. We now inferred all our former suspicions were realized, though we had not been so fortunate as in the present instance of arriving at the knowledge of them.

17<sup>th</sup>.

A good night, without cough, but had two stools, and also two in the course of yesterday with slight griping; the stools are still of a dark colour and offensive smell. Urine turbid and high-coloured. No appetite, on the contrary has a loathing of food, with flatulence, and frequent belchings, which to him are unusual. Pulse 84; skin cool and soft; feels very languid.

To continue the medicine for to-day, and brandy and water, and to begin to-morrow morning to take a table-spoonful of the following tincture three times a day when the stomach is empty, in a small wine glassful of water, in which has been previously mixed



mixed ten drops of the alkali with the tincture of opium.

R Tincture Columb.

Gentian Comp. a. ℥ij.

To commence also with the daily use of four ounces of bread, and to be permitted mustard and horse-radish with his meat, and a little ginger and nutmeg with his brandy and water.

*Liquids taken*,  $1\frac{1}{2}$  pint.

*Urine made*,  $1\frac{1}{2}$  ditto.

18th.

A good night, did not make water during the course of it, and has had only one stool since yesterday, of a natural colour and consistence, but rather more offensive. Urine of a dark yellow colour, with sediment. Pulse 80. Skin cool and soft.

To take the diet and medicines ordered. To be allowed, at his request, fouchong tea without sugar. To take an airing to-day.

L 2

*Liquids*

*Liquids drank, 2 pints.*

*Urine made, 1 $\frac{3}{4}$  ditto.*

Eighteen ounces of this urine yielded a residuum of the same appearances, and sensible properties as that of the 11th February, weighing 1 oz. 3 dr. 20 gr., which being doubled, gives 2 oz. 6 dr. 40 gr., or a drachm less, than the result of the experiment alluded to.

#### *Remarks.*

The report of to-day is extremely satisfactory. The patient has got quit not only of his bowel complaint, but we may venture to say of his disease.

The quantity of animal matter, however, is still greater than that of health, and may arise from some morbid condition of the lacteal vessels and glands, or other parts interfering with healthful assimilation, and which may have been produced by the long continuance of the disease. But from the experiment of the urine of the 21st January,

nuary, we have every reason to suppose there is nothing interfering so much with his recovery, as his own incorrectness.

19<sup>th</sup>.

A tolerable night, but had a little cough, made water twice, no stool. Urine high coloured, but deposits no sediment, and its taste is rather bitter than salt. Pulse 88; skin rather warmer than usual, and not so soft. Was out yesterday.

The bitter and diet to be continued. Desired to take less brandy to-day. Two opium pills at night,

*Liquids drank*,  $2\frac{3}{4}$  pints.

*Urine made*,  $2\frac{1}{2}$  ditto.

*Remarks.*

Our patient can hardly keep within reasonable restriction; for he has probably been exceeding or deviating the last 24 hours, as is shewn by the increase in the pulse, the warmth of skin, and the augmentation of the drink and urine.

L 3

20<sup>th</sup>.

and stool of the 20th.

A good night, made water twice, no stool, the urine high coloured and much falter in taste. Pulse 86; skin cool and soft; appetite better.

The bitter to be discontinued; the pills to be repeated at bed-time, and two of the aperient pills to be taken to-morrow morning. Took only one tea-spoonful of brandy yesterday, in milk, and he is to take brandy only when he is very languid, indeed it would be desirable could he be dissuaded from it altogether. The same diet, with fat meats and the four ounces of bread to be persevered in. Took an airing yesterday.

*Liquids taken, 3 pints.*

*Urine made, 2½ ditto.*

21st.

An easy night, made water twice, a costive stool yesterday, urine high coloured, saltish taste, and deposits the reddish sediment. Pulse 84; skin cool and soft.

Rode

Rode out yesterday, and stopped on the road and drank some brandy and water.

He has taken two of the aperient pills this morning, and which are to be repeated to-morrow if necessary; to continue the opium pills at night, and to take 30 drops of the water of pure kali in a wine glassful of his milk morning and evening, and six drops of the hepatised ammonia every day before dinner.

*Liquids drank,* 3 pints.

*Urine made,* 3 ditto.

*Remarks.*

Though the urine has no saccharine appearance, yet its quantity being augmented these three days, more especially during the last 24 hours, we fear the action of the stomach is returning; and as entire dependence cannot be placed on what he eats and drinks, he has been directed to take the alkali and hepatised ammonia, as correctors and preventatives.



22d.

A good night, made water twice, the urine as yesterday, had two large stools of a deep yellow colour; appetite indifferent. Pulse 84; skin cool and soft. Rode on horseback yesterday. Continues the medicines and diet.

*Liquids taken, 2 pints.*

*Urine made, 2 ditto.*

*Remarks.*

The pulse keeping generally at 84, or a range from that to 80, when apparently free of heat or thirst, with a cool soft skin, it is probable this may have been the usual standard previous to the diabetic attack; if so, it does not at present mark any particular state. It has, however, been lower, but that only after the use of the hepatised ammonia.

23d.

An easy night, no cough, made water twice, had a large stool yesterday, he has taken an aperient pill this morning. Pulse

84;

84; skin cool and soft. Continues the diet and medicines. Rode out on horseback yesterday.

*Liquids drank*,  $2\frac{1}{4}$  pints.

*Urine made*,  $2\frac{1}{4}$  ditto.

24th.

A good night; two stools yesterday; urine the same appearance. Pulse 80; skin cool and moist. Continues the same diet and medicines.

*Liquids drank*,  $3\frac{1}{4}$  pints.

*Urine made*, 3 ditto.

25th.

A good night, little or no cough, made water twice, the appearance of the urine the same, but rather of a paler colour, though depositing the reddish sediment. Pulse 84; skin cool and soft; tongue clean and of a pallid colour.

*Liquids drank*, 3 pints.

*Urine made*, 3 ditto.

Thirty-

Thirty-six ounces of this urine were evaporated, and yielded of a dark brown residuum, having some tenacity and a saline taste, but not so pungent, nor having so urinous a smell as that of the 11th or 18th February, three ounces; and which exceeds the weight of the former by 25 grains, and of the latter by 80 grains, and less by 70 grains than the quantity furnished from the urine previous to the commencement of the treatment.

Of this residuum half an ounce was treated with half an ounce of the nitrous acid, diluted with about twice as much distilled water, neither the honey smell nor the scaly appearances, as in the experiments of the 28th January and 11th February, were produced; on evaporating the mixture to the consistence of a very thick syrup, no scales, nor crystals of oxalic acid, were formed.

A portion of the same residuum was introduced into a retort, and exposed to a graduated heat; the first portion which  
came

came over was alkaline, and towards the end of the process a quantity of carbonate of ammonia, less than in the experiment of the 11th, sublimed into the neck of the retort.

Our patient was weighed, and was found to have lost six pound since the former trial of the 28th January. To-morrow he returns home.

*Remarks.*

The GENERAL having lost six pounds since last weighing, and having only gained four pounds since the commencement of the treatment, may be attributed in some measure to the bowel complaint and frequent evacuations.

The urine also points out a larger proportion of animal matter carried off by it, and of course at present, assimilation and nutrition are not equal to the production of increase of bulk.

We have on the whole to lament our patient's inclination to variety, and his  
extreme

extreme impatience under restrictions, as otherwise we have no doubt he would have returned in a much better state to his family. However, the Case is to us satisfactory, though not accompanied with complete gratification. On parting he was told, and he acknowledged the truth of it, that every thing depended on himself; but at the same time we agreed he was not so favourable a subject for obtaining, by any management, so speedy a recovery as Captain *Meredith*.

An outline of the management was forwarded to Mr. HATCHER, *Ordnance Surgeon at Gosport*, with the request of attending strictly to the circumstances of the patient.

The GENERAL bore the journey very well, and arrived at Portsmouth on the 27th February; but having eaten something improper on the road the day before, he was attacked with a bowel complaint. On the 6th of March he had a return of his bowel complaint from eating beet root. On the  
9th



9th he had the sanction of a physician to eat what he pleased, and to drink wine. The disease was reproduced; for his urine became sweet, increased in quantity, with a return of thirst and feverishness. On the 14th some of his urine was evaporated, and it yielded a saccharine extract of a dark brown colour, and having a little urinous smell.

Thus have our labours and hopes in this Case been frustrated. However unfortunate the termination of it may be, we are satisfied of the strength it has added to conclusions derived from our first Case, now happily finished. But of this the medical world will judge; both Cases being submitted to the examination of those who will take the trouble of reading them, and it is expected they will decide with the same faithfulness and impartiality with which they have been attended and recorded.



*AN ABSTRACT*  
OF  
THE MOST REMARKABLE  
CIRCUMSTANCES AND CHANGES  
IN  
THE DISEASE,

*During the Progress of the Cure in both Cases.*

OF CASE I.

ON the 16th October, 1796, an increased action of the stomach and kidneys; and of the whole system, was apparent, and the quantity of urine seemed to exceed the quantity of drink taken by nearly one half. The treatment proceeded on the idea of preventing the formation of sugar in the stomach, and of removing increased action.

On the 19th, The treatment commenced, though on the 18th he was bled, and which seemed to relieve the general symptoms; the blood exhibited marks of saccharine diffusion over the system.

On

*On the 21<sup>st</sup>,* The quantity of urine was diminished one half, and a cloudiness occurred in the urine denoting some change in its quality; the thirst was also less.

*On the 1<sup>st</sup> November,* The urine was more sensibly changed in its qualities, and it was further reduced in quantity. The thirst was less, and the skin had become moist. The kali sulphuratum was left off, and the hepatised ammonia exhibited, which taken to the quantity of 35 drops in the day, produced sickness and vomiting, with giddiness and drowsiness.

*On the 4<sup>th</sup>,* The urine was not sensibly sweet, and it deposited a red, sandy, or lateritious sediment.

*On the 13<sup>th</sup>,* A deviation in diet took place, which continued the two following days, and had the effect of reproducing the sweetness of urine.

*On*

*On the 17th,* An accidental large dose of the hepatised ammonia lowered the pulse, &c. and hence it appeared to possess the power of a strong narcotic in certain states of the system.

*On the 26th,* The quantity of urine was reduced to  $1\frac{1}{2}$  pints in the 24 hours, possessing apparently, and by evaporation, properties very opposite to those met with in the disease.

*From the 28th Nov. to 5th Dec.* The second deviation in diet happened, and the disease was again reproduced, as was evident by saccharine matter in the urine, and by the increase in the quantity voided. The quantity of liquids taken not having been accurately ascertained, nothing can be inferred from this Case as to the existence, or extent of skin absorption. The account of the Case on the 16th October, could it be fully depended upon, shews that the quantity of urine much exceeded the quantity of drink. The progress of the Case, however, did not support the same opinion.



*On the 6th December,* The urine was again sensibly changed in its properties, and the quantity reduced to one pint and a quarter. The chemical examination of this day's urine proved the absence of sugar, but that there was more animal matter than in health.

*On the 7th,* The quantity of urine did not exceed  $1\frac{1}{2}$  pints, and the chemical results shewed not only the absence of sugar, but that the extractive matter in it was not more than in ordinary urine. The hepatised ammonia, in a large dose, produced its powerful effects on the system. *See the 1st and 17th November.*

*On the 9th,* The blood drawn exhibited appearances very dissimilar from that of the 18th October.

*On the 10th,* The hepatised ammonia was discontinued. Exercise was permitted.

*On the 18th,* He began the use of a restricted allowance of bread.

*On*

*On the 30th,* The restriction of the quantity of bread was taken off. He was found to have gained in weight, since the removal of the disease,  $1\frac{1}{2}$  stone.

*On the 8th February, 1797,* As the disease seemed to be perfectly removed, and from the salt taste of the mouth it being probable he could bear more vegetable matter, he was allowed to add to his former diet potatoes.

*On the 22d,* He began the use of other vegetables, such as cabbage and sallading; and when particularly required, was allowed to take weak brandy and water. From the 8th to this date he used potatoes daily, as well as bread, and he continues well.

*March 15th.* Since the 22d February he has been using various vegetables, and bread since the 18th December, being a period of three months, and he continues free of disease. His urine gave healthy results. He was found to have gained in weight, since

the removal of his disease, three stone one pound. On the whole, we conclude the Case to be successfully and completely terminated.

## OF CASE II.

*On the 8th January, 1797,* The patient was first visited, and found to have the following characteristic symptoms of Diabetes Mellitus; a keenness of appetite, excessive thirst, great spitting, edges of the tongue and the gums brightly red, teeth on edge, a dry hot skin, with quick pulse, and a discharge of a light coloured, and sweetish tasted urine, in daily quantity not less than 10 pints. The disease of at least three years duration.

*On the 9th,* The urine was examined, and found to contain a great proportion of saccharine, and animal matter, amounting to 3 ounces 1 drachm and 10 grains, in 36 ounces troy weight of the urine. An emetic was given.

*On*

*On the 10th,* The regimen, or appropriate treatment, was completely adopted.

*On the 11th,* The quantity of liquids drank, including every species of fluid, in the 24 hours, was  $2\frac{1}{2}$  pints; the quantity of urine voided was exactly the same, and which had already assumed great changes, in apparently having lost its sweetness, and becoming more natural in colour. The diminution of quantity, and the change of quality, so speedily produced, shews not only the nature of the disease, but the decided and immediate good effects of an emetic, with the entire abstinence from vegetable matter, and the sole use of animal food: the removal of the thirst, and the production of the moist skin, corroborate these truths.

*On the 12th,* An increase in the quantity of liquids drank and of the urine, which continued to the 18th.

*On the 14th,* The urine was found to contain no saccharine matter, therefore, in four days, by the use of the animal food, and abstinence from vegetable matter, the saccharine matter was not only prevented from being produced, but was removed from the system.

*On the 15th,* He began the hepatified ammonia, as it was supposed the morbid action of the stomach continued, though the saccharine process had ceased. It has been imagined, from the airiness of the rooms and house in which our patient resided, that the lungs, as well as the skin, has little or no connection with this disease. The skin, it has been seen, became moist on the third day of the treatment, and any condition of it peculiar to this complaint must entirely depend on stomach.

*On the 18th,* From the diminution of the urine to  $2\frac{1}{2}$  pints, which was the quantity it had fallen to on the 11th, it was inferred

no



no dérangement in the structure or condition of the kidneys had taken place, by the long continuance of the disease, that was likely to interfere with the return to the natural and healthful action. The hepatised ammonia, in five drop doses, three times a day, producing its general effects, was diminished.

*On the 20th*, He began to go out and use exercise.

*On the 21st*, The urine, in the same proportion as on the 9th, yielded 1 ounce 7 drachms and 20 grains, being a difference in weight of 1 ounce 1 drachm and 50 grains, and contained apparently no saccharine matter.

*On the 28th*, Began bread. The urine was not found to contain saccharine matter, but the residuum, treated with nitrous acid, furnished a scaly like matter possessing peculiar properties.

*On the 29th*, A great increase of the urine to  $4\frac{1}{4}$  pints, and it was evidently sweetish ; all vegetable matter was again discontinued, and he began the hepatifed ammonia in doses of three drops, four times a day. This reproduction of the disease was clearly owing to a deviation from the allowed diet. *See the detailed Reports and Remarks.*

*On the 2d February*, The urine was again reduced to  $2\frac{1}{4}$  pints, and of a natural appearance, though depositing red sand.

*On the 4th*, Urine 2 pints in 24 hours ; the pulse 72 ; takes 8 drops of the hepatifed ammonia for a dose.

*On the 7th*, The hepatifed ammonia had been augmented gradually to 12 drops, when producing its full effects, it was discontinued.

*On the 9th*, Urine  $1\frac{3}{4}$  pint in 24 hours, while the liquids amounted in the same time to  $2\frac{1}{4}$  pints.

*On*

*On the 11th*, Urine  $2\frac{1}{2}$  pints, liquids taken the same; but there was a warmth of skin, a flushing, and an increase of pulse from the preceding day, exciting the suspicion of some deviation.

*On the 16th*, A frequency of stools, with griping, from eating some shaddock fruit.

*On the 17th*, Urine reduced to  $1\frac{1}{2}$  pints, the quantity of liquids taken being the same.

*On the 18th*, Began the daily use of four ounces of bread. An allowance of mustard and horse-radish with his meat.

*On the 19th*, Urine increased to  $2\frac{1}{2}$  pints, and liquids  $2\frac{3}{4}$  pints.

*On the 25th*, The urine and liquids were equal, amounting each to 3 pints. The urine did not contain saccharine matter, but the quantity of extractive matter was increased beyond that in the former experiments,

periments, except the first on the 9th January.

Total amount of the quantity of  
liquids our patient had taken  
from the 11th January to the  
25th February - - - - 131½ pints.

Total amount of the quantity of  
urine discharged in the same  
period - - - - - 116

---

15½

Therefore on the whole, since the liquids and the urine were accurately measured, and which was from the third day after the commencement of the treatment, the quantity of liquids drank has exceeded the urine made considerably. Though the urine has through the progress of the cure been less than the quantity of liquids taken, yet as the measurement had only commenced after such an actual change had been induced in the disease, so that the quantity of urine had fallen from 10 to 2½ pints in the day, it may still

still be supposed that the urine exceeds the drink, and that probably there was an increase of absorption by the surface previous to the change produced in the condition of the stomach by the treatment; however, any skin or lung affection can only be admitted as depending on sympathetic affection with the stomach, and corresponds with the changes it undergoes.

*On the 26th*, Our patient left us, and returned home.

*On the 6th March*, Had a bowel complaint from eating beet root; and it appears he also had one on the 27th February, from eating something improper on the day preceding.

*On the 9th*, He had the sanction of a Physician to eat what he pleased, and drink wine. The disease was reproduced.

*On the 14th*, Some of the urine was evaporated, and it yielded a saccharine extract; and thus our hopes of effecting a cure have



have been unfortunately frustrated, by circumstances not in our power to have prevented. This satisfaction, however, remains, that the principles of the nature and treatment of the Diabetes Mellitus have been confirmed.

## GENERAL AND COMPARATIVE

## INFERENCES

*RESULTING FROM BOTH CASES.*

1st. **T**HAT the Diabetes Mellitus is a disease of the stomach, &c. proceeding from some morbid change in the natural powers of digestion and assimilation.

2d. That the kidneys, and other parts of the system, as the head and skin, are affected secondarily and generally by sympathy, as well as by a peculiar stimulus.

3d. That the stomach affection consists in an increased action and secretion, with vitiation of the gastric fluid, and probably on too active a state of the lacteal absorbents.

4th. That the cure of the disease is accomplished by regimen and medicines preventing

venting the formation of sugar, and diminishing the increased action of the stomach.

5th. That confinement, an entire abstinence from every species of vegetable matter, a diet solely of animal food, with emetics, hepatised ammonia, and narcotics, comprehend the principal means to be employed.

6th. That the success of the treatment in a great measure establishes the five preceding inferences.

7th. That the saccharine matter of the disease is formed in the stomach, and chiefly from vegetable matter, as has been shewn by the immediate effects produced by the abstinence from vegetable matter, and the use of animal food solely.

8th. That acescency is predominant in diabetic stomachs, which continues even sometime after the entire abstinence from vegetable matter and after the formation of sugar;

sugar; and that while such acescency remains, the disposition to the disease may be supposed to continue.

9th. That the saccharine matter may be removed in three days, and by avoiding vegetable matter will not be again reproduced, but we are not yet able to state accurately when the disease, and the disposition to it, can be finally removed. Such knowledge may be, however, acquired in other cases where the patients adhere correctly to rules.

10th. That there are two circumstances to be considered in this disease, which we may separate in the progress of the treatment, as it has been shewn, that though the formation of sugar was prevented, yet the increased action of the stomach remained and maintained the defect of assimilation, which prevented nutrition. Hence two objects occur in cure: for it is not yet determined whether the preventing the formation of sugar by an entire abstinence from vegetable matter, and the use of animal

mal food with fats, if properly persevered in, might not ultimately comprehend the other, namely, the removal of the morbid action of the stomach.

11th. That the lungs and skin have no connection with the production of the disease.

12th. That the quantity of urine is probably in proportion to the quantity of liquids taken in, and has but little dependence on absorption of fluids from the surface of either skin or lungs.

13th. That though the disease has been shewn to consist in an increased morbid action of the stomach, and probably too great a secretion, with vitiation of the gastric fluid, yet the peculiar or specific conditions of either, as forming the disease, is acknowledged to ly in obscurity, and must remain so until the physiology of healthful digestion is properly explained and established.

14th.



14th. That the first Case had only been of about seven or eight months duration when the treatment commenced; but the second Case had been upwards of three years continuance. The age of the one was 34, of the other 57. Circumstances which constituted material differences, though they seemed not to create corresponding difficulties in the treatment, so far as the direct removal of the complaint was concerned. They may, however, retard in the one instance the entire restoration of health.

15th. That in both Cases, deviations occurred in the management, and were respectively followed by reproductions of the disease, and though disadvantageous to the patients, have confirmed our views of its nature and treatment.

16th *and lastly*. That from both Cases we may warrant this general conclusion, THAT THE DIABETES MELLITUS IS SO FAR UNDERSTOOD, AS TO BE SUCCESSFULLY CURED.



A BRIEF NARRATION,  
OF WHAT HAS BEEN HITHERTO KNOWN, OR  
FORMERLY ADVANCED RESPECTING  
*THE DIABETES MELLITUS.*

**T**HE accounts and histories of Doctors DOBSON, CULLEN, HOME, DARWIN, and to these may be added RICHTER, comprehend every thing that has been published or advanced on this subject, at least so far as we are acquainted.

DR. DOBSON.

In the case of *Peter Dickenson*, recited by him in the 5th vol. of *Medical Obs. and Inqs.* as having occurred in 1772, hard labour when very hungry, is stated as one of the causes to which his patient had sometimes been exposed. An uneasiness about the stomach, and a perpetual gnawing sense

of hunger, with thirst, were among the first symptoms. The disease was like that of our first case, acute and rapid, and of about the same duration. During a seven month's treatment in the public hospital at *Liverpool*, some benefit was derived; but from the jumble of things no preference to any one remedy can be assigned. The warm bath, antimonials and opiates were among the medicines; but there were also bark and elixir of vitriol. His diet was probably such as would maintain the disease in defiance of any proper medicine. The drinks had, among other things, small beer and acidulated water.

The blood of this patient resembled the blood of our first case, but apparently contained more sugar. The urine shewed appearances and gave results pretty much the same, though it seemed to contain more sugar, and less saline or animal matter.

He supposes that the disease is an affection of the general system depending on a  
species

species of imperfect digestion and assimilation. The saccharine process he imagines is not at an end after the formation of the chyle, but is still further carried on in the course of the circulation. The indications of cure he states to consist in strengthening the digestive powers, in promoting a due sanguification, and establishing a perfect assimilation through the whole œconomy.

He has an observation, that the Diabetes proves in some a very rapid consumption; and that he has known it to terminate fatally in less than five weeks.

This case is of much importance in any investigation of Diabetes. It was once a solitary case; but it has now been strongly supported by another testimony: the blood of our first case, though imparting no sensible sweetness, yet its wheyish taste, spontaneous changes, and finally resisting putrefaction, afford strong marks of a saccharine impregnation.



Dr. Dobson alledges that the disease is an affection of the general system depending on the stomach; and he also maintains that the mere conversion of the food into that proportion of sugar, chyle usually contains, would not furnish the great quantity separated by the kidneys; he therefore supposes a continuance of the process beyond the stomach, and in the course of the circulation.

He states that the cure of Diabetes has been hitherto unsuccessful.

On the whole, we infer that Dr. Dobson's case, in its history, and in some of his views of its nature, with his want of success in the cure, are testimonies in favour of our doctrine; but the particular application is so obvious that we decline making it.

#### DR. CULLEN.

This great man had met with the Diabetes twenty times, and though he entertained

tained opinions of its nature similar to that of Dr. Dobson (indeed he has alledged that those opinions were communicated by himself to Dobson, who had prosecuted them farther), yet he concludes his observations on the disease with these words, " The proximate cause being so little known or ascertained, I cannot propose any rational method of cure. From the testimony of several authors, I believe that the disease has been cured ; but I believe also that this has seldom happened ; and when the disease has been cured, I doubt much if it was affected by the several remedies to which those cures have been ascribed. In all the instances of the disease which I myself have seen, and in several others of which I have been informed, no cure of it has ever been made in Scotland, though many instances of it have occurred, and in most of them the remedies recommended by authors have been diligently employed. I cannot, therefore, with any advantage enter into a detail of these remedies ; and as the disease, together with its several circumstances, when

they shall hereafter occur, is likely to become the subject of diligent investigation, I avoid going farther at present, and judge it prudent to suspend my opinion till I shall have more observations and experiments upon which I can form it more clearly."

*First Lines of the Practice of Physic.*

In taking notice of the opinion that the disease might be a kidney affection, he observes, "It seems to have been sometimes connected with calculous affections of the kidneys; and it is possible that an irritation applied there may increase the secretion of urine. It perhaps often does so; but how it should produce the singular change that takes place in the state of the urine, is not to be easily explained. It certainly often happens, that calculous matters are long present in the urinary passages, without having any such effect as that of producing Diabetes in any shape. Some have supposed that the disease occurs from a relaxed state of the secretory vessels of the kidneys; and indeed the dissections of persons who  
had

had died of this disease have shewn the kidneys in a very flaccid state. This, however, is probably to be considered as rather the effect than the cause of the disease. That no topical affection of the kidneys has a share in producing this disease, and that a fault in the assimilation of the fluids is rather to be blamed, I conclude from hence, that even the solid food taken in, increases the quantity of the urine voided, at the same time with an increase of the saccharine matter above-mentioned."

### DR. HOME

Commences his account of two cases of the Diabetes Mellitus, in his Chemical Experiments, 2d edition, page 319, with the following opinion; "There is no disease that has been so little improved in its history, theory, or cure, as the Diabetes. Aretæus has given the best description of it. All attempts to explain its pathology have hitherto been fruitless; and it is yet,  
in

in its advanced state, incurable. This must in some measure be attributed to the variety of the disease." And he concludes, " Thus these two patients exhausted all that experience had ever recommended, and almost all that theory could suggest. Yet in both cases the disease resisted all the means of cure used. When we are convinced of this, these histories are not without their advantage ; as, by shewing that the field is quite open, we may hereafter hope for some more successful attempt."

One of the patients had the disease three, the other four years. They were bled, but the serum is said to have been in both without sweetness ; the blood of one had an inflammatory crust. The urine was sweet, and that of one of them, evaporated by Dr. BLACK, gave an extract similar to that of our cases ; and it is remarkable the quantity of extract yielded, as well as in Dobson's case, amounted to nearly the same weight. The appetite in both was much greater than in good health ; in one of them it was voracious.



cious. In both it was attended with great thirst, but in the one with the voracious appetite it was immoderate and unquenchable. One of them was under cure  $2\frac{1}{2}$  months, and dismissed in the same state as he was admitted. The other, who had the disease four years, died; and the following appearances on dissection are described: "On examining the kidneys, the left was larger than natural, and its substance softer; there was no uncommon appearance in the right kidney, except a greater degree of softness. The substance of both kidneys had a sour odour. The ureters were of a natural size. The coats of the bladder were stronger than common; and no lacteals could be observed about the neck of it, though some have suspected that much of the fluid is deposited in the bladder, by a retrograde motion in the lymphatics. All the glands of the mesentery and mesocolon were enlarged, of a pale colour, and of a firm consistence. The vascular system of the mesentery was rather large. The liver was natural, and had some firm adhesions to the colon. The large intestines

testines were much loaded with hard fæces. The rest of the abdominal and thoracic viscera were natural. The kidneys were afterwards sent to DR. MONRO, for further examination ; and I received the following letter from him : “ The kidneys of your patient were unluckily cut open before I received them, which put it out of my power to examine them properly, by injecting their vessels. I regretted this the more, because I had long ago found it possible to make an injection coloured with vermilion, pass from the renal artery into the uriniferous tubes, when there had been no previous disease of the kidney. Both kidneys seemed to be of a large size, were of a remarkable pale colour, and felt rather softer than common. No other difference in the texture of the vessels, or solid parts, could be distinguished by the naked eye or with glasses. The smell of both kidneys was certainly different from what I had ever observed, being in some degree sour as well as putrid.”

After

After reciting the various opinions which had been entertained of the disease, he goes on, " Were I to give a theory, to explain the nature and symptoms of this wonderful disease, I would say, that it arises from a defect of the animal or assimilatory process, by which the aliment is converted into the nature of our body. I have long looked on the excess or defect of this process, as the source of many disorders. All putrid diseases, the scurvy, &c. seem to be owing to its excess; acidity of the stomach to its defect. Among the latter the Diabetes may be arranged. For, 1st. The remote causes shew it. It arises from what debilitates the body, as moisture, preceding diseases, great evacuations, &c. by which it becomes incapable to assimilate the food. So Sydenham thought, *Affimulandis succis protinus impar est.* 2d. The white chylous matter, which is often secreted with the urine, shews that the vegetable part of the chyle is not assimilated. The dilatation of the urinary excretories cannot alone account for this, as the serous part of the fluids would

would then escape too, which does not happen. 3d. Sugar is found in diabetic urine. Sweet chyle is the first product of the stomachic and intestinal digestion; as chyle, in the thoracic duct, and milk, which is a speedy secretion of it, contain much saccharine matter. This is changed in some hours, by the animal process into an ammoniacal salt, which is that found in all the excretions. But the saccharine salt still remaining in diabetic urine, which is the most perfectly animalised fluid, shews that there is great defect in the animal process. 4th. Urine being of a septic nature, runs fast into putrescency. But the diabetic urine turns acidulous; and with, and often without yeast, undergoes the vinous fermentation. Those peculiarities shew its vegetable nature, as vegetable juices alone are capable of the vinous and acetous fermentations. It likewise shews, that it is the saline parts alone of bodies that ferment; for the fire must have coagulated the mucilaginous particles, had there been any in the diabetic urine. These vegetable salts  
shew

shew a defect in the animal process. These arguments appear more convincing than any of the former. But it may be objected to them, 1st. That animal food should cure it, which it did not. (Dr. Home has been gratified in knowing that animal food will cure, at least that it is of the first and most essential step towards it.) 2d. That septics, which brought on putrid eructations, made no change (those, however, are now found to contribute to the cure, and will therefore add to the Doctor's gratification). 3d. That the proportion of saccharine matter is much greater in their urine than in milk. But milk has not perhaps the whole saccharine salts of the chyle."

The Doctor then adds, " If the theory alone of this disease was defective, it would be a matter of less consequence. But, from what we are to relate, the cure is fully as imperfect."

The remedies used in both cases were sudorifics, antispasmodics, stimulants, astringents,



gents, tonics, incaffants, and feptics ; but no determinate good effects were produced by any of them.

Dr. Home's account is altogether of a mixed nature ; much of it approaches to the real nature of the difeafe ; much is expreffed in doubt ; and much is left open for farther enquiry : but on the whole it is the moft comprehensive account of the difeafe with which we are acquainted, and deferves attentive perufal, by thofe who are inclined to confider this peculiar complaint.

From the obfervations of Dr. Home, with regard to fkin abforption in augmenting the quantity of urine, no certain conclufion can be drawn.

#### DR. DARWIN,

In the firft volume of his *Zoonomia*, page 318, a cafe of Diabetes Mellitus is recited, which occurred in the Infirmary at *Stafford*, and was fomewhat relieved by opium,  
given

given to the quantity of three grains every four hours. Rofin was tried. During the use of the opium the patient sweated much in the night, so as to have large drops stand on his face and all over him. He was bled, and the blood was found to have the common appearances, except that the *serum resembled cheese whey*. From which it is concluded that the saccharine matter does not enter the blood vessels, though formed during the process of digestion, but that it is conveyed to the bladder by a supposed urinary branch of absorbents connected with the lacteals by many anastomoses, and whose motion in this disease are inverse or retrograde.

In this patient the thirst was great, and his appetite such, as that he eat twice as much as other people, and complained of a rising in his throat, like the globus hystericus. The disease terminated fatally, and did not appear to have exceeded in duration 12 or 13 months.

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On

On this case Dr. Darwin observes, "that the rising in the throat, and the twitchings of his limbs, seem to indicate some similarity between the Diabetes and the hysteric disease, besides the great flow of pale urine, which is common to them both. Perhaps if the mesenteric glands were nicely inspected in the dissections of these patients; and if the thoracic duct, and the larger branches of the lacteals, and if the lymphatics, which arise from the bladder, were well examined by injection, or by the knife, the causes of Diabetes might be more certainly understood. The opium alone, and the opium with the rosin, seem much to have served this patient, and might probably have effected a cure, if the disease had been slighter, or the medicine had been exhibited, before it had been confirmed by habit during the seven months it had continued. The increase of the quantity of water on beginning the large doses of rosin, was probably owing to his omitting the morning doses of opium."

So

So far Dr. Darwin. The case appears to us of importance, as shewing, 1st. That the *serum of the blood had the appearance of cheese whey*, and thus resembled that of our first case. 2d. That opium reduced the quantity of urine from 18 to 8 pints a day, and produced a moist skin, or rather sweating: and 3d. That rosin increased the quantity of urine. Therefore it corroborates our opinion of the general diffusion of saccharine matter (though, from the serum tasting salt, he draws an opposite inference, *see our first Case*), of the nature of the stomach's action, and the dependence of the quantity of urine on it, as well as the stimulus of the sugar, for the rosin acting as a stimulant increased this discharge, while the opium, as a narcotic, diminished it; and from the effects of the latter, an entire diet of animal food along with its use was only wanting to have brought about a cure.

## DR. RICHTER, OF GOETTINGEN,

In his Medical and Surgical Observations, (English translation of 1794) has a chapter on Diabetes; but his account is by no means precise or distinct, and though he evidently alludes to the Diabetes Mellitus, yet from some of his observations he probably comprehends other species of the disease. His opinions, however, of the nature and treatment of Diabetes are not destitute of satisfactory points.

Diabetes appears to him to be generally of a spasmodic nature. "According to my experiments it is occasioned by a stimulus which acts upon the kidneys, and hence a *secretio urinæ aucta*, sometimes also *perversa* is the consequence. When we cannot discover the particular irritation, nor remove it, I believe that antispasmodics are the proper remedies for this disease."



One case, where 30 pounds of urine, as clear as water, were made daily, and accompanied with a small quick pulse, and an uneasy sensation and fulness in the region of the stomach, an emetic immediately removed the disease. Another patient is said to have had temporary removals of a species of Diabetes by antimonials and warm baths; but on some scorbutic symptoms appearing he got wort to drink, during the use of which the disease disappeared. A third case was cured in 10 days by tartar emetic and valerian. And in a fourth ipecacuan easily produced vomiting, and as often as the patient threw up, the disease disappeared for 24 hours.

“ The alternate increase, and even total intermission of this disease, do not, I think, allow us to ascribe it to weakness and relaxation of the kidneys alone.”

“ Tonics are here seldom useful. Brisbane asserts that Peruvian bark, and all strengthening medicines, are for the most

part hurtful. And if they sometimes should have done good, was it not by diminishing irritation and irritability?"

"In my opinion, the chief thing is to find out and remove the irritation which acts upon the kidneys; and when this cannot be discovered, to counteract its action upon the kidneys by sedatives and antispasmodics." He recommends camphor in emulsion as deserving a trial.

The opinion of Dr. Dobson, that the Diabetes arises from an imperfect assimilation, and that of Dr. Brisbane, who imputes it to a peculiar kind of colliquation, Dr. Richter equally rejects as having little probability. "For in most patients no signs of colliquation are found, not even in the urine, no previous cause of colliquation, or of impeded assimilation. The disease frequently comes on very quickly. The functions of the organs of digestion are unimpaired &c."

Dr.

Dr. Richter, in the same work, has a chapter on acidity in the stomach, wherein he relates a case of St. Vitus's dance, connected with an extraordinary acid state of the stomach; and which was cured in eight days by a mixture of equal parts of asafœtida and ox's gall, in doses of a scruple three times a day. Afterwards the medicine was continued three weeks.

In the same chapter there are similar observations on acidity of stomach, and though they are not applied to any thing connected with Diabetes, yet, as appearing to me in relation to diabetic stomach, they are here inserted.

“ Acid in the primæ viæ is certainly of two kinds, arising from two different sources. It is sometimes plainly the consequence of a corruptio spontanea of acids taken in by the mouth, or of meat and drink which have become sour; and in this case it only incommodes the patient when he has taken such meat or drink; it is easily blunted by

alkaline or absorbent medicines, and keeps away as long as the patient carefully uses a *diæta antacida*. Medicines which strengthen digestion with an antacid diet, generally cure the patient of this acid."

" But sometimes the patient is incessantly tormented with acid, eat what he will, even though he only takes animal food. Even when he takes nothing at all, the acid torments him. None of the medicines which blunt acidity are of any use, or they only procure him a short mitigation. And in this case the acid is not the produce of a *corruptio spontanea*, but a *secretio perversa liquorum menstruorum*. The patient, as Kæmpf says, has a brewery of vinegar in his stomach. The digestive fluids themselves are sour, because an irritation acts on the secretory organs, and so deranges their operations, that they make out a very different product from what they should do. The bile itself is in such cases as sour as vitriolic acid."

" And

“ And in all these cases an irritation is to blame, which disturbs the secretory organs; and every thing depends on finding out this irritation, and removing it. Kæmpf mentions the case of a patient who had such a brewing of vinegar in the stomach.”

“ When the irritation cannot be discovered, and in the case above related, of the St. Vitus's dance, it could not be found out, the pills which I have formerly spoken of, composed of equal parts of asafoetida and ox's bile, are of so great use, that I can now, from experience, recommend them almost as a specific. Perhaps they act merely as antispasmodics, which lessen or quite counteract the effect of the unknown stimulus on the secretory organs of digestion.”

In Dr. Home's fatal case of Diabetes, asafoetida was exhibited. “ I gave him a drachm of asafoetida in the day; but it took away his appetite, was attended with a feverish state, and was at last given up, as disagreeable



disagreeable to him. It seemed rather to hurt him." However, the asafœtida seems entitled to a trial in Diabetes Mellitus, as probably possessed with the power of diminishing the stomach's action.

To those remarks on Diabetes may be subjoined the testimony of Burserius to the good effects of blood-letting, from his own experience; and the recommendation of oily applications to the skin, to prevent aqueous absorption from the air, by Tissot,

We have thus given an account of what has been written on Diabetes, with the view of conveying a general description and notion of the disease. Some scattered and detached cases may, however, be found on late record, and we shall notice two of them. Besides which, cases of the disease have been met with at Edinburgh, and clinically discussed, containing such practical points as merit attention; I shall therefore concisely point them out.

DR.

DR. FERRIAR, in his first volume of Medical Histories and Reflections, p. 114, gives a short account of a case of the Diabetes, with sweet urine, cured in a short time by a course of bark, with elixir of vitriol. But it is proper here to mention that Dobson's patient took bark and elixir of vitriol. And I know of one case where the acid was tried, and discontinued, as always increasing the affection of the stomach.

MR. SCOTT, Surgeon, at Bombay, in his letter to Sir Joseph Banks, on the effects of the nitric acid (Mr. Scott, we apprehend, used the nitrous acid) in liver affections, in fever, and in lues venerea, has the following paragraph.

“ I have met with two instances only in this country of Diabetes: they were both natives and in the decline of life; I cured them both by mercury, after many other remedies had been tried. One of those men had a relapse of his disease, which I removed a second time with the nitric acid.

I thought

I thought this a satisfactory correspondence in the effects of the two remedies. May they not both be useful in that disease?"

Mr. Scott does not state whether his disease was the Diabetes Mellitus. Mercury to affect the mouth did not even alleviate in our first case, indeed under it the disease got worse. Mr. Scott's account of the effects of nitric acid, shews it to produce a state of mouth similar to the Diabetic. The effects of the nitric acid in giving out oxygene readily and largely, must be *à priori* opposite to our views of the treatment of the Diabetes Mellitus.

However, a disease depending on a peculiar action of the stomach, and condition of its gastric fluid, may possibly be removed by substances of apparently opposite and contradictory tendencies, which have the power of inducing a new action, and in this way removing the morbid one, especially if those substances should have the property of diminishing certain actions of the system, a  
quality

quality supposed to be possessed by the mineral acids, particularly the vitriolic. The nitrous acid in its properties as a medicine are only beginning to be unfolded. In a chemical point of view, and in a concentrated state, it is known to decompose sugar.

IN EDINBURGH, the Diabetes Mellitus has been in one case suspended by opium given to the quantity of 15 grains a day; it has been relieved by the warm bath, by rubbing the skin with oil and lard, and by animal fats taken into the stomach. Every other remedy has been fully and accurately tried without advantage, at least so far as we have been informed. With regard to the nature of the disease the medical opinion is divided, there being Professors and Practitioners who adopt similar ideas to Doctors Dobson and Cullen, while others refer it solely to kidney affection.

IN LONDON the medical opinion lately has been, so far as we understand, generally referred to a deranged state of the kidneys.

Such

Such is the sum of what has been advanced, taught, or otherwise communicated, on the subject of the Diabetes Mellitus, previous to the dispersion of our notes of Captain Meredith's case, and which may be recapitulated as follows.

1st. That the Diabetes Mellitus has been referred to a defective state of digestion and assimilation.

2d. That it has been referred to a morbid condition of the kidneys.

3d. That the precise nature of either affection has not been explained, nor understood.

4th. That the disease has been generally held incurable, as no distinct views of treatment have been proposed, nor any practical mode been uniformly successful; indeed very few cases of the disease are on record as having been cured, and even these are very unsatisfactory, as not being founded on  
any



any principle, but seemingly conducted at random.

5th. That immoderate thirst, voracious appetite, and a great discharge of urine, containing a large proportion of saccharine and other matter, are characteristic symptoms of the disease.

6th. That dissection has shewn very slight changes in the natural appearance of the kidneys; but that an enlargement of mesenteric glands has been uniformly met with.

7th. That the blood, taken in any period of the disease, though not sensibly sweet to the taste, except in Dobson's case, yet *its serum has had a wheyish appearance*. Home, however, mentions no appearance deviating from that of health, but a *thick inflammatory crust* in the blood of one of the patients.

8th.

8th. That the only relief has been obtained from blood-letting, emetics, narcotics, antispasmodics, warm bathing, rubbing the skin with oil, animal fats received into the stomach, and what Home terms septics; though Dr. Ferriar and Mr. Scott attribute cures to bark, the fulphuric and nitric acids.

And 9th. That tonics and stimulants generally have done harm.

On the whole, we feel ourselves justified in saying that every thing that has been hitherto known or done, with regard to the nature and treatment of the Diabetes Mellitus, previous to Captain Meredith's case, and the dispersion of the notes on it, have been generally unsuccessful; and though we still acknowledge that the pathology is not in all its parts completely elucidated, and perhaps it never may, at least while the process of digestion remains unexplained, yet we venture to alledge that, except scurvy, there is perhaps no general affection so rationally

tionally and decidedly illustrated as is now the cure of the Diabetes Mellitus.

The review we have given of what has been known regarding the disease, and the inferences drawn from it, though warranting the opinion just stated, yet they serve strongly to support the practical doctrine we have advanced; and thus they equally exhibit the defects of our former knowledge respecting diabetic disease, and point out the extent, and add to the truth of our present acquirements.



A GENERAL VIEW  
OF THE  
*Nature of the Diabetes Mellitus,*  
AND ITS  
APPROPRIATE TREATMENT;  
INCLUDING  
OBSERVATIONS ON SOME DISEASES DEPENDING  
ON, OR, PRINCIPALLY CONNECTED WITH  
*STOMACH AFFECTION.*

IN the recital of the two cases of Diabetes, the remarks as they gradually suggested themselves during the progress of the treatment, have been regularly inserted. By which will be perceived the manner any opinions formed of the disease arose, and the grounds on which they were founded. And as these grounds amount to strong presumptive proof, we can, in the general view now to be taken, proceed with more correctness and decision. They will also furnish a detailed clinical account of the disease, and which is perhaps, on the whole, the most satisfactory mode of describing

P 2



cribing the history and treatment with its progress; it also lays the foundation for the most rational opinion respecting its nature.

*Of the History of the Diabetes Mellitus.*

There is some difficulty in ascertaining the first, or earliest symptoms of the Diabetes Mellitus, or that state of it previous to, or at the time the sweetness and increase of urine appear, as the discharge of urine is generally considered by the patients as the necessary effect of the thirst and quantity of drink, and is thus frequently for a long time overlooked. Besides, the sweetness of the urine is probably only discovered accidentally.

But there is hardly a doubt of a previous affection of the stomach taking place before the period, when the peculiar character of the disease, by the production of saccharine matter, is formed, and sensibly shewn in the  
urine,

urine, while at the same time the quantity of this fluid is increased.

In our first case the bulimia canina preceded, at least six months, the hectic state of the Diabetes, or, so far as recollected, even some months before the increase in the discharge of urine; and there was a keenness of appetite so as to be taken notice of for several years. In our second case there was an indulgence of much variety of food and drink, connected with circumstances very likely to induce an affection of the stomach; and when it did take place, was accompanied with so much head-ach that the state of the urine was for a long time overlooked.

The history of the commencement of the Diabetes Mellitus is therefore obscure and unsatisfactory; but when the hectic fever and wasting arrive, the disease has been generally detected, and the history of it then accurately detailed.

The most remarkable symptoms are voraciousness, or keenness of appetite, with quick returns of it, without the feel of satiation; a parched mouth, with constant spitting of a thick, viscid phlegm, of a mawkish, sweetish or bitterish taste; intense thirst; a whitish tongue with red bright sides; red and swelled gums, with the teeth feeling as on edge from acids, and loose in their sockets; head-ach; a dry hot skin, with flushing of the face; a quickened pulse; an increase of clear urine of a light straw colour, having a sweetish taste, resembling sugar, or rather honey and water; an uneasiness of the stomach and kidneys; a wasting of flesh; and a weariness and disinclination to motion or exertion, with the feeling of weakness.

It is singular that with such symptoms when separated from the urine, medical people should have avoided making any enquiry into the state of that secretion; for by such an omission the disease has gone on for months undetected. The urine in its appearance

pearance and various changes requires constant inspection, for with other marks it will furnish a pretty certain criterion of the state of the constitution, as depending on stomach affection, whether morbid or healthful, and it may probably serve to denote, with tolerable accuracy, the relative gradation between both.

*Of the Causes of the Diabetes Mellitus.*

Active labour of body or mind, singly or combined; an unrestrained indulgence in eating, and of various articles of food, especially of those things exciting the action of the stomach, or otherwise interfering with its healthful motions; a free use of fermented liquors; or an uniform participation of strong vegetable food of the farinaceous kinds, are the circumstances of life which have usually preceded an attack of the disease,

The most common predisposition seems to consist in a naturally strong action of the  
P 4                      stomach,

stomach, demanding food oftener and in larger quantity than what generally appears to be required. With such a condition of the stomach, and opportunities of indulging in variety, in warm stimulating condiments, in wines, and other fermented liquors, or even in a full participation of farinaceous food, as oatmeal and potatoes, with plentiful draughts of small beer, accompanied by great bodily exercise, with or without active mental employment, the disease may be, and is actually produced. At any rate these are the circumstances under which the disease has been found to have most commonly occurred. The history, however, and the remote causes require more facts, and more accurate investigations, in order to lead to complete elucidation.

Previous to entering on our view of the immediate causes of the Diabetes Mellitus, we shall describe, as concisely as possible, what has been most commonly received with regard to the nature of the gastric fluid and digestion, referring to Chaptal, Spallanzani,



Spallanzani, Stevens, Fordyce, and Cullen, for the particular details.

*Of the Gastric Juice.*

CHAPTAL gives the following recapitulation, as containing the sum of what is known with respect to the nature and properties of this peculiar fluid.

That the gastric juice reduces the aliments into an uniform magma, even out of the body, and in vitro; and that it acts in the same manner on the stomach after death.

That the gastric juice effects the solution of the aliments included in tubes of metals, and consequently defended from any trituration. That though there is no trituration in membranous stomachs, this action powerfully assists the effect of the digestive juices in animals whose stomach is muscular, such as ducks, &c.

That

That the gastric juice acts by its solvent power, and not as a ferment; because the ordinary and natural digestion is attended with no disengagement of air nor inflation, nor heat, nor, in a word, with any other of the phenomena of fermentation.

Nothing positive or certain can be asserted respecting the nature of the gastric juice. It is sometimes acid, and sometimes insipid. In the gastric juice of carnivorous birds and some others, a disengaged acid, a resin and animal substance, united with a small quantity of common salt, have been found. The gastric juice of ruminating animals contains ammonia, an extractive animal substance, and common salt. Phosphoric acid has been found disengaged in the gastric fluid. The nature of the gastric juice is said to vary according to that of the aliments, (was this certain, it would lead to an explanation of the immediate cause of the Diabetes Mellitus, and other affections depending on the stomach.) This juice is constantly acid  
when

when the diet is vegetable. The gastric juice of various animals differs; that of the kite, falcon, &c. does not dissolve bread, though it digests flesh meat; and that of the turkey, duck, &c. has no action upon flesh, but converts the hardest grain into a pulp.

### *Of Digestion.*

With regard to the immediate process of digestion, very little is as yet clearly ascertained.

The process has been referred to the solvent power of the gastric fluid; to a fermentation among the substances received into the stomach; to the simple conversion of substances capable of yielding mucilage; to chemical decomposition and mixture; and to the action of the stomach itself. Difficulties, however, occur every where, and it is reserved for the new doctrines of chemistry to unfold, with any perspicuity, the business of digestion. The morbid state of the  
digestive

digestive process in the Diabetes Mellitus, as well as other morbid affections of the stomach, shew very certainly that chemical decompositions and combinations take place in this organ. Therefore it may be inferred some chemical changes take place in the healthful process, though the peculiar nature of those still remain undiscovered. In this way the pathology of stomach diseases may lead to the physiology of its healthy condition and action.

SPALLANZANI alledges that he has proved, 1st, That of the three species of fermentation established by modern chemists and naturalists, viz. the vinous, the acetous, and the putrid, neither takes place in digestion. 2nd, That though an acid sometimes appears during this process, yet it disappears entirely towards the conclusion of it. 3d, That putrefaction never in health attends digestion. 4th, That the gastric fluid is a real antiseptic. 5th, That the human stomach is destitute of any triturating force, and that digestion is the effect of the gastric fluid

fluid alone, though the fluid which is secreted by the fides of the small intestines may complete the process.

JOHN HUNTER, in his paper on the Digestion of the Stomach after death, recorded in the Philosophical Transactions, thus concludes: "These appearances throw considerable light on the principles of digestion; they shew that it is not mechanical power, nor contractions of the stomach, nor heat, but something secreted in the coats of the stomach, which is thrown into its cavity, and there animalizes the food, or assimilates it to the nature of the blood. The power of this juice is confined or limited to certain substances, especially of the vegetable and animal kingdoms; and although this menstruum is capable of acting independently of the stomach, yet it is obliged to that viscus for its continuance." He subjoins the following observation. "In all the animals, whether carnivorous or not, upon which I made observations or experiments to discover whether or not there was an acid in the stomach.



mach, (and I tried this in a great variety) I constantly found that there was an acid, but not a strong one, in the juices contained in that viscus in a natural state."

DOCTOR STEVENS, from his Experiments concerning digestion, draws the subsequent inferences.

"These experiments throw great light on digestion. They shew, that it is not the effect of heat, trituration, putrefaction, or fermentation alone, but of a powerful solvent, secreted by the coats of the stomach, which converts the aliment into a fluid, resembling the blood. If it should be asked, what defends the organ itself? I would answer, that it is the vital principle, as Mr. Hunter's observations shew; after death it is dissolved as readily as any other inanimate substance. It is probable, that every species of animal has its peculiar gastric liquor, capable of dissolving certain substances only. Some living solely upon vegetables, others upon animals, and some of these cannot be obliged

obliged to feed upon plants, by a fast of whatever continuance. All, by an infallible instinct, choose what is best adapted to their gastric fluid. The food, when dissolved, is expelled from the stomach, and being mixed with the bile and pancreatic juice in the duodenum, is changed into a mild blood, and inodorous liquid which is denominated chyle. The chyle is absorbed by numberless vessels, and is carried by the thoracic duct into the subclavian vein, in order to repair the constant waste of the body."

DOCTOR CULLEN's account of Digestion follows. *See his Physiology.*

213. "It is the saccharine matter, and especially this when blended with oily matter in different proportion, that makes the greatest part of the common matter of vegetables, and is the chief part of the vegetable aliment of animals. It is this, therefore, that we have especially to consider here; and, as it lies in vegetables, it is different from

from the most part of animal matters in the following respects."

" It is readily fusceptible of a vinous and acetous fermentation, and spontaneously enters into the one or other of these; and, without undergoing more or less of these, it perhaps never enters into a putrefactive fermentation."

" The same matter treated by distillation, without addition, gives out always, in the first part of the distillation, an acid, and only afterwards a volatile alkali in small proportion."

" The same vegetable matter, treated by calcination, leaves ashes, which contain a fixed alkali, and an earth that is or may be converted into a quick-lime."

214. " In all these respects, the common matter of animals is considerably different."

" This

“ This enters spontaneously into a putrefactive fermentation, and that without passing through the vinous or acetous : at least these are not to be distinctly perceived.”

“ The same animal matter, treated by distillation, gives out always, in the first part of the distillation, a volatile alkali in large proportion, and only afterwards by a great force of fire it gives out an acid.”

“ Animal matters, treated by calcination, leave ashes, in which no alkali is to be found ; and the earth is not calcareous, nor convertible into a quick-lime by any means yet known.”

215. “ These differences are sufficiently marked ; but it is proper to observe here, that the vegetable matter we treat of, by undergoing a putrefactive fermentation, is changed so as to acquire very exactly most of those characters of animal matter we have just now mentioned.”

In the diabetic stomach vegetable matter does not seem to undergo any putrefactive change, the change appears to be in the evolution of its saccharine matter, after which it does not go beyond the acid state.

From the quantity of saccharine matter apparently separated in Diabetes, it is possible more than the ordinary quantity of sugar naturally furnished by vegetables is formed, and that there is a sugar-making process going on in the stomach. However, of this we are not satisfied, as in diabetic patients a great quantity of vegetable matter is taken, and the pure sugar in our diabetic urine, could it have been separated from the other matter, would have been probably small. For after the use of animal food, where no sugar was formed, and when in fact there was none discovered in the urine, there was very little difference in the proportion of animal matter, and such difference would probably have given the quantity of sugar; a quantity certainly not more than the vegetable matter could have furnished.

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We have however seen the disease reproduced with what we supposed a very sensibly greater quantity of sugar, than we could believe it was possible to obtain from so small a proportion of vegetable matter admitted to have been taken; in this we may undoubtedly have been deceived: but to return.

236. " Digestion seems to us to proceed in this manner. The fluids of the stomach have the power of suddenly and powerfully loosening the fixed air of the alimentary matters, which is the first step towards putrefaction, and that which most effectually breaks down the texture, and perhaps the mixture of bodies. But we now know, that putrescent bodies are very powerful in exciting an aciescent fermentation in vegetable substances, which the human stomach is hardly ever without; and that this aciescent, therefore, in the next place, very constantly succeeds, and an acid is produced in the stomach. This acidity makes the effects of the putrefaction disappear; and the acidity in its turn disappears also, probably

by its being absorbed by, or united with, the putrescent and oily matters here present; and it is in this manner that we suppose that the animal fluid is produced, and daily renewed by the combination of a fresh portion of acid with putrescent fluids previously existing in the body. The daily production of acid in the human stomach, and its readily disappearing again, without shewing any morbid effects, renders our doctrine sufficiently probable."

237. "This is the assimilation of vegetables that I suppose to take place, and is begun in the stomach, but is not completed there; for we observe, that the long retention of the alimentary matters in the stomach, whether from the insolubility of the matter, or from an obstruction of the pylorus, produces a greater degree of acidity; and, in general, the acidity which commonly prevails in the stomach, does not disappear but in the after course of the aliment."

238. "It is especially the bile, added to the matters which have passed from the  
stomach

stomach into the duodenum, that is fitted to cover the acidity which appeared in the stomach. It is probable also, that the pancreatic and intestinal liquors contribute to the same effect; and it is perhaps for the same purpose, that the lymph is constantly added to the chyle in its course. But after all, we must rest in the general idea, and own that we do not know exactly how this matter proceeds, nor what the several fluids, added to the aliment in the different parts of its course, truly contribute to the changes of it."

242. "It is very justly supposed, that the proper mixture or assimilation is not finished till the chyle, mixed with the mass of blood, has undergone the action of the lungs, through the vessels of which it must immediately pass, after entering the subclavian vein, and seemingly before it is applied to any of the purposes of the animal œconomy."

243. "What change the fluids undergo in passing through the lungs, or by what means the supposed changes are produced, after all that has been said, seems still to be very little known."

"Upon the whole, we still know but little of the production or formation of the animal fluids."

The new doctrines of chemistry, however, begin to unfold the mysteries of the human subject.

Pathology refers generally to two systems, the humoral, and that of the moving fibres. Boerhaave was the great advocate of the former; Hoffman, Cullen, and we may add Brown and Darwin, the framers and supporters of the latter. Cullen retained so much of the humoral pathology as to explain scurvy, and he has preserved the following observation. "Although it cannot be denied, that the fluids of the human body suffer

fer various morbid changes; and that upon these, diseases may primarily depend; yet I must beg leave to maintain, that the nature of these changes is seldom understood, and more seldom still is it known when they have taken place." Vid. his First Lines, Ed. 1784, Preface, page 32. What would he now have said of the Diabetes Mellitus? What would he have said of the nitrous acid, and of substances similarly affecting the system; of the effects of a diet of animal food, and of hepatised ammonia? And it might further be asked, in what manner do contagions, and morbid poisons act on the human system, especially in reproducing poisons of the same nature? Do not the recent facts, in the application of the new doctrines of chemistry, bid fair to revive an humoral pathology, blended with that of the moving fibres, of some extent?

The immediate causes of the Diabetes Mellitus, as our two cases shew, are a morbid condition of the stomach, and a general diffusion of saccharine matter,



probably some change from that of health in the fluids of the system.

This disease therefore we alledge, (as has been formerly observed) consists in an increased morbid action of the stomach, with too great a secretion, and an alteration in the quality of the gastric fluid, producing saccharine matter, and which remains unchanged, by a decomposition of the vegetable matter taken in with the food, and a certain defect of assimilation as connected with digestion, and which probably may be owing to an excessive activity of the lacteal absorbents arising from the peculiar stimulus of sugar in a separate state, or other matter; but which may also depend on a sympathetic effect with the morbidly increased action of the stomach.

The voraciousness or keenness of appetite, with the very quick returns of it after eating, mark an increased action of the stomach, and which is farther corroborated by the success not only of our practice, but of  
any

any advantage which has been obtained by particular remedies. Warm bathing, unctuous applications to the skin, animal fats, and large quantities of opium administered, internally have proved the only alleviations, or steps approaching to cure which this disease has hitherto derived. It is true, bark and alum, the sulphuric and nitrous acids, have been mentioned as affording relief and even curing, and so has the Bristol water. But of either we can say nothing positively, though bark and alum, and those acids may be supposed to diminish increased action of a peculiar kind, indeed we know that bark and the sulphuric acid actually do so.

The increased secretion, and altered quality of the gastric fluid, are the necessary consequences of the increased action of the stomach. The opinion, that there is an increased quantity of the gastric fluid, is supported not only by the necessity of it arising from the increased action of vessels, but by the rapidity and nature of digestion, and the great quantity of a viscid matter uniformly  
thrown

thrown up by emetics during the continuance of the disease. The alteration of its quality is proved by the same circumstances.

Besides, if it is admitted, that a dryness of the mouth, bad taste, and a failure of saliva mark in dyspepsia, a deficiency and vitiation of the gastric fluid, we may with equal propriety alledge, that the mawkish, sourish, and sweetish taste, with the viscid quality of the saliva, and its increased quantity in Diabetes, prove the superabundance and vitiation of the gastric fluid.

The explanation of the increase of urine refers to the formation of saccharine matter principally; but we also suppose a sympathetic effect may be attributed from the increased action of the stomach, communicated to the kidneys. And thus, though there were no saccharine matter existing, yet by the increased action of the stomach remaining, a præternatural quantity of urine would continue to be made. Our second case justifies this supposition, and it is further supported

ported by confidering, that there is an increase of urine in the inordinate actions of the stomach in other diseases; and that there is a great diminution of it in scurvy, where little or no action is admitted. The vinous Diabetes gives the increased action of the stomach which is necessary to the Diabetes Mellitus, but depending on a temporary stimulus soon ceases, whereas the other continues as its stimulus is permanent. May not this stimulus be the acid state of the fluids in the stomach, and which animal food, with an entire abstraction of vegetable matter, may remove?

A scarcity of urine of a high colour, and offensive smell, when of some continuance, may denote the stomach of imperfect force; the common healthy quantity, and usual appearance the stomach in perfect force; and a great proportion of urine the stomach of too much force.

The increased quantity of urine in the Diabetes has been supposed to be connected  
with

with a state of skin favouring absorption from its surface. Though absorption from the surface seems now to be universally admitted, yet there are some doubts in our mind, at least with regard to its influence in this case. In our second patient, when the quantity of liquids taken, and the quantity of urine made was exactly kept, there appears an excess in the quantity drank. DR. CURRIE, of *Liverpool*, mentions to us, that in a case of Diabetes where he used the tepid bath with milk and with broth, he never could discover that the patient gained any weight during immersion. In another case where, in consequence of an obstruction of the pharynx, the patient died of hunger, after subsisting without swallowing upwards of 30 days, the same remark was made.

The great quantity of extractive matter in the diabetic urine, exclusive of the saccharine substance, shews some defect in the powers of assimilation; but as those powers are not sufficiently understood, we cannot attempt any particular explanation. Such defect



defect seems to depend on the state of the stomach producing the disease, and probably on excessive activity of the lacteal absorbents.

But to elucidate this subject farther, we introduce the subsequent concise account of what is known of healthy urine, drawn up by Mr. *Cruikshank*, who has interspersed it with facts which have not hitherto been accurately mentioned.

### *Of Healthy Urine.*

The urine is a fluid consisting of several neutral salts, and animal extractive matter held in solution by a large proportion of water. The relative proportions of these different substances are found to vary so much in the same person at different times, both in health and disease, that it is extremely difficult to point out what may be considered as a standard for healthy urine.

Urine

Urine, when first voided, always contains an excess of acid, and reddens the tincture of litmus; it soon, however, runs into the putrefactive state, accompanied with the production of ammonia. Its specific gravity reaches from 1005 to 1033, distilled water being 1000. By evaporation, 36 ounces yield a residuum on a medium of 1 ounce and 1 drachm, and which consists of the muriates of soda and ammonia, the phosphates of soda, lime, and ammonia, the phosphoric and lithic acids, and animal extractive matter. Their relative proportions, in a healthy state, may be as follow :

Saline matter, or fusible salt,	5 dr. 20 grs.
Animal extractive matter,	3 dr. 20 grs.
Lithic acid, with phosphate of lime	} 20 grs.

The neutral salts, when separated by evaporation and crystallisation, are very fusible, and readily melt even by a moderate heat, hence they have been called fusible salts of urine,

urine, microcosmic salts, &c.—their fusibility is owing to the phosphoric salts.

The animal extractive matter yields by distillation, water containing the carbonate of ammonia; this carbonate in a concrete state; a foetid empyneumatic oil; a little phosphorus; and lastly, a residuum of animal coal difficult to incinerate. Treated with 2 or 3 times its weight of nitrous acid, it affords one half its weight of shining scaly substances resembling acid of borax, their figure being apparently that of flat rhomboids. They were of the same nature as those obtained by a similar process from the residuum of the urine of our second patient at two different times—which see. But we may further add, that although they evaporated in white smoke when exposed to a moderate heat, yet when more strongly ignited, they burned with a reddish flame, and a kind of detonation similar to the nitrate of ammonia.

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The urine, after acute diseases, becomes loaded with animal and saline matter, and deposits, on cooling, a copious lateritious sediment which has been supposed by Scheele to be the lithic acid; but by others the phosphate of lime, precipitated by ammonia in a disengaged state: we believe it frequently consists of both.

In some diseases of the liver, particularly what has been called schirrus, it is generally small in quantity, and high coloured, depositing a remarkable rose-coloured sediment; it is also frequently impregnated with bile. In idiopathic dropsy, and several diseases with increased action of the arterial system, it often contains the coagulable part of the serum, which may be readily detected by the nitrous acid or heat.

Soon after eating, and in hysterical paroxysms it is limpid, with scarcely any sensible smell, and contains hardly any extractive matter. Urine of this kind when evaporated

*Man. lactate*

porated yields almost a purely saline residuum. Such, with the diabetic urine, containing saccharine matter, are the most remarkable alterations which have been hitherto observed in this fluid, either in health, or general affections of the constitution: but to return.

The nature of the increased action of the stomach in the Diabetes Mellitus becomes a proper object of enquiry. We take it for granted, that two increased actions of different natures distinctly and separately produce corresponding diseases. The one being an increased action with strength, the other an increased action with weakness, and either may probably be the affection of the whole system, or only a part of it. On the accurate distinction of these, rests rational and successful practice. Those actions more precisely appear in diseases with local affection; the first, more generally characterising membranous inflammation, is produced by variation of temperature, while the latter being the effect of a specific cause, is of the ery-

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thematous nature of inflammation. But particular organs take on increased actions which appear simple, and only become morbid by their continuance producing certain organic effects on the organs themselves, or by sympathetic affection with other parts, if not the whole of the system. The lungs, liver, kidneys, and stomach are liable to be so affected.

IN DR. WEBSTER'S Facts tending to shew the connection of the stomach with life, disease, and recovery, are the following.

“ That the stomach may be in a great variety of states, appears from the organs of sense being capable of such variety in regard to sensation, from causes external or internal. Each taste implies a specific state of organ. Alkaline, acid, sweet, bitter, astringent, acrid, aromatic, and foetid matter excite their respective tastes, which imply states of organ as numerous as the individuals of these classes, with their various combinations. Some kinds of matter affect different

ferent parts of the same organ, and the sensation is propagated to a greater or less distance without any probability of absorption. So an irritation in the lungs is often felt at the epiglottis; in the liver, at the shoulder; in the kidney, at the testicle and thigh; in the bladder at the end of the glans penis; in the colon at the navel; in every part of the system at the stomach; and in the stomach at every part of the system."

"The faulty state of the stomach is not always attended with impaired appetite, which may be prurient, irregular, and even excessive; but, that in such cases the stomach is not in a natural state is evident from the deficient assimilation in phthisis, bulimia, and some moribund cases; and from the morbid one, in chlorosis, worms, and sea-scurvy, in which last the citric acid, taken into the stomach, where it must be changed, seems to counteract the effect of salt meat, cold and moisture on the surface, excess or defect of exercise, and despondence, the usual causes of the disease. The

fudden effects of small doses of aromatics foetids, ammonia, alcohol, æther, or opium, in allaying the sense of weakness, heat, cold, sweating, spasm, pain, and other symptoms all over the body, with depressions of mind; and of the same medicines, and the bark in preventing and arresting ague fits, shew, that such symptoms depend on states of stomach, and that these medicines act on the stomach inducing changes in it, the effects of which are propagated over the system. If fever, inflammatory and hæmorrhagic diseases were affections merely of the heart and blood-vessels; nervous diseases of the brain and nerves; dropfy and scrophula of the lymphatics, schirrus of the other glands; ulcers of the skin; dyspnea and cough of the lungs; rheumatism of the large joints, and gout of the small; jaundice of the ducts of the liver, and Diabetes of the kidneys, these would often exist together; but being symptoms of states of stomach, and as different states of the same organ cannot exist at the same time, the system is thus not readily overpowered by a  
confluence

confluence of diseases; the same causes induce different symptoms according to predisposition; the same remedy answers in various morbid states, and it seems thus, that the balance of secretions is established. How often, after death, are morbid states of brain, lungs, and heart in vain looked for, while the cause of all the symptoms is either invisible or found in the stomach, which has not seemed previously to suffer."

DR. WHYTT, in his *Observations on Nervous Disorders*, 3d Edition, *page* 233, notices as a nervous symptom a great craving for food, which he says may be owing to some humour in the cavity of the stomach stimulating its nerves, or to those nerves being so changed that they are almost always affected with that sensation we call hunger, unless when food is newly taken into the stomach. Dr. Lower has observed, that hypochondriac and hysteric people are often troubled with an uncommon hunger, or fames canina; and while this lasts they are almost quite free from other complaints;

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plaints; but that their usual ailments return with their natural appetite. In other cases, however, the morbid matter affecting the nerves of the stomach in hypochondriac and hysteric patients, sometimes occasions a want of appetite and a nausea. In like manner, the true gout, when turned upon the stomach, according to the different sensibility of the nerves of that organ, or its being more or less fixed upon these nerves, produces very different effects; such as an oppression, a langor, flatulence, want of appetite, and a sense of coldness in the stomach, or a violent pain with cramps and vomiting. The malacia and pica, common to women with child, and to girls affected with the chlorosis, proceed either from an acid or some other acrid humour in the stomach, or from its nerves being so changed by the state of pregnancy, as to produce a longing for certain foods, and other substances, which, in these cases, are generally most grateful to the taste, as well as apt to remedy the disorder of the stomach.

*And*



*And in page 465, when treating of a sickness and pain in the stomach, with vomiting after eating, owing to a too great delicacy, or an unnatural sensibility of the nerves of the stomach, either in consequence of an irregularity of the menstrea, or of some acrid humour of the blood falling on those nerves; the Doctor observes, that he has found nothing produce such immediate good effects as laudanum given an hour or more before dinner or supper.*

THOUGH those facts and observations relating to the stomach are detailed in rather long extracts, yet their importance will justify their insertion; as in applying them to the state of stomach, and its influence in the Diabetes Mellitus, not a little explanation is given. They all tend to shew the importance of the stomach, its power over the system, and its extreme sensibility. They shew that morbid affections of the stomach are universally experienced. They also denote, that such affections may be owing to increased sensibility, irregular ac-

tion, and to deviations from the healthful conditions of its fluids. They likewise shew the efficacy of opium in such complaints of the stomach. Other applications of these facts might be made, but they are purposely deferred.

In persons whose stomachs may be considered to be in perfect force, exposed to active employment, varieties of food and drink, and who are naturally inclined to indulge in them, this organ would require additional efforts, and from healthy strong force, an increased morbid action producing increased and morbid secretion, might arise. This seems to be the manner in which Captain Meredith's disease arose; for he had been actively employed the three years preceding any particular indisposition, and during which he eat so keenly as to be taken notice of by his brother officers, and for some years preceding these, he was less actively employed, and even then he eat heartily, but not so as to be remarked.

*Again ;—*

*Again*;—In a person with a stomach in perfect force, exposed to much exercise, to fatigue and other circumstances inducing general debility; but who, during the operation of those circumstances, enjoyed what is styled good eating and drinking, in other words high living, it may be imagined some change might be produced in the stomach, and which most probably would be irregular action, tending more particularly to the increased kind, consequent secretion, and vitiation of the gastric fluid. This appears to be the way in which our second case of disease was induced. The same mode of living would probably in others, according to the predisposition, have produced gout, or some disease of indirect debility. Though we have seen, in our first case, that the predisposition to Diabetes may exist with that of gout.

*And, again*;—There may probably be some causes producing a change of the gastric fluid from want of action in the stomach, as is supposed in dyspepsia, and such  
morbid

morbid state of the gastric fluid might stimulate and produce an increased morbid action of the stomach, further secretion and vitiation, and hence Diabetes might arise. Such a state of stomach often occurs in gout, but it does not continue so long as to form the other disease. In this manner the disease may originate among the poor people of Scotland, and among whom it not unfrequently occurs. They are very subject to pyrosis, are accustomed to fatigue, and live chiefly on a diet of oatmeal and potatoes, with very little animal food, perhaps not tasting it above once or twice a week. The hard labour to which the common people of Scotland are exposed in procuring their subsistence, requires a proportional quantity of food, and they generally eat heartily, but the kind of food which they have it in their power to purchase not being of an animal nature, or even of a suitable mixture of it, a stomach disease is frequently produced by probably the formation of some peculiar irritating matter, which, acting on the stomach, would produce

duce the peculiarly increased action in the Diabetes Mellitus.

Acid and alkaline acrimonies have been, in theoretical systems of medicine, laid as the foundation of manifold diseases; and although they have, like other theories, been mostly laid aside, except by Dr. Cullen, who has retained a scorbutic acrimony, yet it is extremely probable, some matters possessing peculiarly acid and alkaline properties, but more commonly the former, are produced by certain conditions of the stomach arising from the nature of foods (as we have seen to happen to the gastric fluid, which is said to vary according to the nature of the diet), habits of life and general employments, and may give rise to those affections depending on a morbid state of the stomach. Whatever may have been said to the contrary on this subject, we now know, that a saccharine substance may be formed or evolved in the stomach, diffused over the system, producing general as well as local effects.

In



In the Diabetes Mellitus the gastric fluid may possess acid properties of a peculiar nature, which may have the power of assimilating vegetable matter to a substance having the nature of sugar. Such assimilations are not unusual in the morbid affections of the animal œconomy, as especially happens in those proceeding from the application of animal poisons. There is hardly, however, any necessity for this supposition, as the formation of the saccharine matter may be explained by considering it as evolved by a process in the stomach connected with its morbid state, and that of its fluids; from the vegetable matters taken in; or, by considering it, as the mere disengagement of saccharine matter already formed in vegetable substances, or what we should rather say by both. Here the saccharine matter, in whatever way, formed, remains undecomposed. Our cases justify this opinion, as well as that such evolution or disengagement of saccharine matter, and its remaining in a separate state is owing to some vitiation in  
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the gastric fluid, and the morbidly increased action of the stomach.

But though the peculiar nature of the viti-  
ation of the gastric fluid is not properly un-  
derstood, yet it may be supposed, that aci-  
dity is the predominant state of the gastric  
fluid in the diabetic stomach, and it is not  
improbable that an alkaline property of the  
same fluid may be the state of it in scurvy.

Does the present extent of our knowledge  
with regard to digestion, support our reason-  
ing on this subject? It is alledged, that the  
gastric fluid is the most efficient agent in  
digestion, and that it appears to be furnished  
by glands or exhalent vessels; and though its  
healthful condition has as yet not been sa-  
tisfactorily explained, by common or any  
chemical examination, yet we may infer  
from analogy, that a derangement of the  
glandular structure furnishing the gastric  
fluid, or if supplied by exhalent vessels, of  
them, or their ordinary actions, a change  
may be produced in the fluid they supply.

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The nature of such change is therefore the great difficulty. The theory of glandular secretion in a healthy condition is still a desideratum in physiology. The doctrines of the new chemistry may in time lead to the explanation of both the healthful and morbid nature of secretion, and illustrate, as we have before observed, many other points of physiology and pathology.

In whichever manner the Diabetes Mellitus is produced, as the increased action of the stomach in it, is probably always connected with the effect of a long application of varied stimuli, the nature of the action may be that which is supposed to arise from debility. But the stomach being an extremely sensible organ in its healthful condition, its increased morbid action assumes that of apparently accumulated irritability. The action is such, that emetics, narcotics, animal oils and fats, and a diet of entire animal food are the remedies which have been only found decidedly successful.

The

The excessive action of the lacteal absorbents is probably of the same nature, as it arises from stimuli, though it may be connected with sympathetic affection, and even then, it may be of the same nature as the diseased action with which it is sympathizing.

The certain defect of assimilation which we have stated as forming part of the Diabetes Mellitus, may depend, as we have alleged, on the excessive action of the lacteal absorbents, as well as on imperfect digestion. The stomach and those vessels act so keenly, that the matters of digestion are disposed of before the necessary and salutary combination or conversion of them into proper chyle can be effected, and of course such unassimilated matter thus taken up and forwarded into the system, as it does not seem to undergo afterwards the healthy change, will be separated by the kidneys. This explanation refers to the bulimial state of stomach in Diabetes, and which we have  
seen

seen may continue after the formation of saccharine matter has ceased.

The variable stomach of pregnant women depends on irregular action, being sometimes anorexial, at other times bulimial, and with these states there is a scarcity or increase of saliva; and we have met with temporary Diabetes; but of course, having no particular view, we have not hitherto attended to the circumstance. Pica and chlorosis have been relieved by blood-letting, and often by opium, and we may often observe, than an increase of limpid urine is frequently a symptom of the latter. In pica different substances are desired; in some, chalk, ashes, and earth; in others, acids, as vinegar, lemon juice, unripe fruits, and such inclinations probably depend on a difference in the nature of the gastric fluid at the time.

By attending to the various states of the stomach which occur, and the corresponding changes of urine, with the particular causes  
producing



producing them, and the condition of the persons at the time, much farther light may be thrown on the causes immediately producing the state of stomach and gastric fluid on which the Diabetes Mellitus depends. In the mean time we comprise the proximate cause of the disease in this concise abstract. A morbidly increased action of the stomach, with consequent secretion and vitiation of the gastric fluid, marked by a voraciousness of appetite, quick returns of it, and great acidity. The direct effects of which, are the formation or evolution of saccharine matter, accompanied with a certain defect of assimilation, probably in part owing to too much activity of the lacteal absorbents. Such increased action of the stomach and lacteal absorbents with the stimulus of the saccharine matter produce the great urinary discharge, the thirst, headache, and dry skin.

*Of the Characters hitherto given of the Diabetes Mellitus, and the one proposed.*

Any definition hitherto given of this disease by nosologists or other writers, is imperfect. It may be necessary to state the characters which they have adopted.

#### SAUVAGE.

Subito post pastum potulentorum cum magna siti per urinæ vias, emissio.

#### CULLEN.

Urinæ plerumque præternaturalis, copia immodica, profusio chronica.

Of which the following is one of his idiopathic species.

Diabetes

Diabetes (Mellitus) cum urina odoris,  
coloris, et saporis mellei,

### HOME.

Urinæ aucta et subdulcis; fitis perpetua;  
cutis arida et plerumque squamosa.

Of these three definitions, that of Doctor Home approaches to the most perfect. In the character of a disease, the original and essential symptoms should be principally comprehended; and those only are necessary, which at the same time that they distinguish the disease convey a notion of its peculiar nature, and on what it depends. Therefore the Diabetes Mellitus may be thus defined.

*Desiderium cibi inexplebile; fitis perpetua;  
urina aucta et subdulcis; pulsus frequens; calor parum auctus; cutis arida, cum marcore.*

The particular parts of this character, are taken from Linnaeus's definition of Bulimia, and Home's of Diabetes, except those of frequency of pulse, heat, and wasting.

Besides the symptoms which we have recited as characteristic, there are others generally present, and which seem to form distinguishing points of the disease; but in the definition were avoided. Such are the nature and quantity of the saliva; the appearance of the tongue, gums, and teeth; the frequent uneasy sensation of the stomach and loins, and phymosis.

*Of the appropriate Treatment of the Diabetes Mellitus.*

The principles of the treatment as established by our cases of the disease, consist;

1st. *In the prevention of the formation, or evolution of the saccharine matter in the stomach.*

2ndly.

*2ndly. In the removal of the morbidly increased action of the stomach; and, in the restoration of the stomach to a healthful condition.*

Whatever may be the cause of the formation of the saccharine matter, it is necessary to prevent it, as on its general stimulus in the system, and particularly on the kidneys, very general affections are maintained. Besides, the means employed to prevent such formation may tend to the removal of the morbid action of the stomach and lacteal absorbents, and the increased and altered state of the gastric fluid on which its production probably depends. Animal food, animal fats, and confinement, with an entire abstinence from every kind of vegetable matter, afford the means, and which may be facilitated by the daily use of alkalies, calcareous and testaceous substances. The quantity of animal food should be restricted, and given in as small quantities as possible to satisfy the stomach.

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When the urine points out the absence of the saccharine matter, and at the same time its quantity continues more than natural, and containing likewise more of the extractive matter in a viscid or tenacious form, while the appetite remains keen, it may be presumed that the increased morbid action of the stomach and lacteal absorbents is not removed. It becomes then necessary to exhibit the hepatised ammonia, with an opiate and antimonial at night, and continue them until the active condition of the stomach is removed; the marks of which are, a scarcity and high coloured state of the urine with turbidness, furnishing on evaporation an offensively smelted, and saltish tasted residuum without tenacity, accompanied with a want of appetite and loathing of food. At this time the tongue and gums will be found to have lost their florid colour, and become pallid.

When such a state occurs exercise is to be enjoined, a gradual return to the use of bread, and those vegetables and drinks  
which

which are the least likely to furnish saccharine matter, or become acid in the stomach. Should this period of the disease be overlooked, and the confinement and animal food rigidly persevered in, scurvy or something akin to it might be produced. That such might be the termination of the Diabetes, the appearances which arose, more especially in our first case, render extremely probable. The gripings and offensive stools, the oiliness on the surface of the urine and its high colour, the foetid breath and saltish taste, the great lassitude and heaviness, with indifference to either eating, drinking, or moving, were strong marks of a state approaching to scurvy.

When the disease has continued long, it may leave local effects, which may prevent the entire restoration of perfect health. The most simple form of which might be supposed to consist in mere relaxation and dilatation of vessels, as those of the kidneys, and the lacteal absorbents; or, in a habit acquired by long continued action. Our first case

shews that these, when the disease has not been of very long duration, may be soon removed. They may however prove one of the circumstances retarding recovery in such a length of disease as that of our second case; but even in this the kidneys very early partook of apparently their ordinary action. But dissection has shewn some morbid condition or derangement of the mesenteric or lacteal absorbent glands, and of the kidneys. There may also arise some derangement of stomach structure, of pancreas, spleen, liver, and possibly of lungs. Such sequelæ would probably be sooner, and more certainly produced in scrophulous habits. Whenever they occur, recovery must be retarded if not finally prevented. They however will not interfere with the actual removal of the diabetic disease. We suspected some affection of mesenteric glands, and of stomach in our second case; but we are warranted in alledging, that want of steadiness in the patient solely prevented the complete removal of the complaint. The nature of its sequelæ, or whether they will remain so as to maintain

maintain a state of chronic disease depending on such sequelæ for its cause, requires still to be determined. Of this determination, however, we entertain little prospect from the manner in which the case has hitherto proceeded. Should such complaints become evident, they must be treated as the symptoms denote, and whatever they may be, we imagine regimen will comprehend the principal means necessary for their removal. Until we know more accurately and decidedly the physiology of digestion, assimilation, and on what the application of nourishment actually depends, we cannot expect to obtain a just view of the pathology as arising from a morbid alteration of the powers of either.

For a more particular detail of the mode of treatment we refer to the two cases of the disease.

*Miscellaneous Observations on Scurvy, Diabetes Mellitus, and other Diseases depending on Stomach Affection.*

Could scurvy be so treated as to make it terminate in Diabetes?

This is a curious and interesting subject, and merits enquiry, especially if we should be correct in our supposition, that the two diseases form the two extremes of a chain of diseases, depending on certain and varied morbid conditions of the stomach. The intermediate links of which may be composed of the following idiopathic diseases.

*Bulimia.*

*Polydipsia.* Though Cullen ranges this as an idiopathic disease, it appears to us a matter of doubt,

*Chlorosis, Pica.*

*Dyspepsia, Anorexia, Pyrosis.*

*Hypochondriasis.*

*Hysteria.*

*Arthritis,*



*Arthritis.*

*Lithiasis.*

*Polyfarcia*, AND OTHERS.

But admitting our extreme links to be accurately formed and placed, it will require further industry to assign to each link its appropriated connexion with the two extremes. In such pursuit the great points to be kept in view are the degrees of stomach action, the one consisting of a morbid increase of the natural quantity of action, the other of a diminution of it; the condition of the gastric fluid in quantity and quality; the disposition in the stomach to acescency or otherwise; and the influence produced on the quantity and quality of the urine.

In scurvy the stomach is probably principally affected, but generally overlooked in the other more prominent features of the disease. No chemical investigation has hitherto, so far as we know, been made of the urine, and which is to be regretted, as it would have served to shew more distinctly the

the difference between it and that of Diabetes. It has been observed, that the appetite for food in every stage of scurvy, is seldom impaired; the patient has been even known to expire with the bite in his mouth. We should be inclined to say there was no appetite for food, but that there was a torpid state of stomach which takes and receives any thing without the least sensation, or probably gratification. Having no desire for food unless placed before him, he then eats and goes on, but he suffers it to be removed from him with indifference.

Dr. Lind's Pathology of Scurvy consists in the opinion, that the indigestible nature of the diet of seafaring people occasions a debility in the digestive organs; hence the disease arises. This notion constitutes our predisposition or stomach of imperfect force, and when it occurs with confinement, and an entire want of recent vegetables, scurvy will be produced. (See the fact in Case I. respecting the appearance of the scurvy among the convicts on board the convict ship at Woolwich.

wich. We also refer with much satisfaction to Dr. Trotter's last Edition of his Treatise on Scurvy.) When the stomach's influence in the production of the disease is maintained, it is there shewn that the disease does not arise unless there has been a deficiency or want of recent vegetables, and that the cure consists in a sufficiency of those, or in the use of lemons. Other facts render it probable the disease may be produced by whatever de-oxygenates the system under the circumstances of its predisposition, and may be cured by whatever hyper-oxygenates the system, or in other words, by whatever excites appetite, increases the quantity of urine, gives whiteness to the teeth, and redness to the tongue, accompanied with emaciation.

A difficulty of respiration is mentioned among the symptoms of scurvy, but not among its earliest symptoms, and it is most remarkable in the advanced stages of the disease. Is it not therefore to be supposed that the lungs become secondarily affected  
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in scurvy? If so, the production of the disease does not depend on any circumstance depending on the lungs. This is illustrated by the two following cases.

CASE I. On the 13th January, 1797, we visited Mr. P——s, *Brewer in Woolwich*, and found him unable to walk, or even stand up without assistance. He is frequently affected with a species of hysteria, and occasionally with headach; yesterday he had a sort of fit which was said to affect principally one side, but there are no remains of it to-day. His countenance is bloated, and of a livid aspect. His body is corpulent. The pulse is weak and rather slow, skin cool and soft, tongue foul, teeth furred, belly hard and costive, stools when procured, are foetid, urine high coloured, thick, and in very small quantity. His appetite may be termed a negative one, as he expresses no desire either for food or drink; but he eats and drinks heartily when it is set before him, and seems to have no sense of satiety. On the opening of a door he complains

complains of much uneasiness from a sense of coldness and chilliness which he says directly affect him. He has an enlarged thyroid gland, or what may be more correctly called an extensive bronchocelous tumour, which appears to impede the full action of the lungs, or rather interrupts it at particular times, for he does not seem to have ordinarily any difficulty in respiration, but his attendants say in laying down, and when in bed, his breathing becomes laborious. This tumour has been enlarging these nine or ten years, but within these last three it has considerably increased.

About 18 months ago his present complaints were taken notice of, as he then began to fall off in the ordinary duties of his employment. For the last three months he has been almost entirely confined in small unventilated rooms, and has lived chiefly on animal food. He has two issues in his neck, takes cathartic extract to keep his bowels open, and draughts with ethereal nitrous spirit. He has taken at different times valerian,



lerian, cuprum ammoniacum, rhus toxicodendron, and from the latter some benefit was supposed to have been derived.

On the supposition that the disease depended on a de-oxygenated state, the effect of confinement, a diet of animal food, and a deficiency of vegetables, but probably arising originally, and even now assisted in its continuance and progress by the tumour in the neck impeding the full action of the lungs, and interrupting the return of the venous blood from the head, we recommended to Mr. Cotterel, the gentleman who constantly attended him, to try the following plan.

Daily exercise in a carriage, and regulated according to what he might be found to endure; his diet to consist of two thirds vegetables, and a liberal allowance of fruit, the other animal food; and to drink lemonade with a little wine, and new small beer. To take three times a day a draught consisting of distilled water, nitrous acid, and the faluted ponderous earth, beginning with ten  
drops

drops of the former and three of the latter, gradually augmenting it. The bowels to be kept open by a pill composed of the compound extract of colocynth, antimonial powder, and calomel.

This plan, however, being so different to what had been hitherto proposed, it was deferred until a consultation was arranged. The consultation took place, and consisted of three physicians, (two of whom had formerly attended him, the other had not seen him before) Mr. Cotterel, and myself. The principles we had proposed were generally, though not circumstantially adopted. He was ordered a vegetable diet, with only the allowance of animal food twice a week, and that to be of the lightest kind. An infusion of burnt sponge was directed. His bowels were to be kept open. This plan was pursued a fortnight, and any change observed consisted in the countenance being less bloated, and the stools not being so offensive. The other symptoms remained. At this time a pint and a half of the urine which was of a

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high colour, and offensive smell, with a turbid sediment, were evaporated, and yielded of an offensive dark coloured slimy residuum without tenacity nearly two ounces.

The patient now commenced the muriated barytes in doses of three drops, three times a day. The same diet was continued with the allowance of cyder and water, and lemonade for drink. At the end of a week he had got to five drops of the muriated barytes, he made more urine and of a lighter colour; the bowels were less costive; the countenance more animated. With the muriated barytes, he was now directed to take in water ten drops of the nitrous acid. The same diet. In another week there were more evident signs of amendment, and he was able to go out in a carriage for air and exercise, being the first time these three months. He spoke more distinctly, talked of business, walked a little by himself, and could turn in bed. The urine deposited a reddish sandy sediment, which incrustated the pot. It may be remembered that our  
diabetic

diabetic urine, as it lost its saccharine, and great proportion of extractive matter, formed a similar sediment and crust. Does not this mark a similitude, and a sort of limit between the diabetic and scorbutic stomach at a certain period of recovery from either? And does it not in some degree support our supposition that either disease probably may be made to run into the other? The diet and medicines were continued. The latter to be gradually augmented. For the first time the dimensions of the neck, including the most prominent parts of the tumour, were taken by Mr. Butler, the partner of Mr. Cotterel, and they amounted to 19 inches. In three weeks more, he was so much recovered, as to be able to use walking exercise without assistance, and to the extent of two miles. His general health returned quickly. He had fallen off in bulk very considerably. His countenance was cheerful, and highly animated; his lips were floridly red. He made the natural quantity of urine, and the neck measured less by an inch.

CASE II. On the 5th February, 1797, we accidentally met M. TEWSON, a woman who had a bronchocelous tumour, and to whom we had given the muriated barytes. We were surpris'd on examination to find the tumour reduced to three fourths of its size, and though still remarkable did not seem to interrupt, or in the smallest degree interfere with the action of the lungs. It commenced by kernels in 1788, rapidly increased in 1793, when we saw her, and then it interfered much with her health; she was very hysterical, short-breathed, and of a pallid and bloated countenance. She was obliged to work as a washer-woman, and live on poor food, principally of the vegetable kind. She began the muriated barytes, and continued it pretty constantly for twelve months. She could never exceed seven drops three times a day. The effects were an improved appetite, and an increased flow of urine. After taking the medicine two months, the tumour began to diminish, and went on doing so until its present smallness. She has taken none of  
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the medicine since, but on my recommendation she has again begun it, though she is in apparent health, and says the tumour is no inconvenience to her.

These cases suggest the subsequent remarks.

1st. The complaints of both, may be said to be originally owing to a bronchocelous tumour on the anterior part of the neck, interrupting the free and full action of the lungs, and thus preventing their healthy operation on the system.

2nd. The same tumour especially in *P—s'* case probably retarded the venous blood from the head.

3d. *P——s* was naturally a corpulent and fleshy man, of active employment as a Brewer, and able to live well. *Tewson* was a poor woman, of active labour for subsistence, and could only supply herself with the cheapest food.

4th. *P——s'* tumour began nine or ten years ago, but it has increased rapidly these three last years, and from such increase his present complaints have arisen. *Tewson's* tumour commenced several years ago, and three years since it has quickly augmented, but within these last 18 months has as rapidly diminished. During such increase *P——s* lived well, and as Englishmen of that class generally do, on animal food chiefly; while *Tewson* lived poorly, and principally on the cheapest vegetable matter.

5th. *Tewson* was obliged to work, be out in the air, and live as she could, and she used the terra ponderosa salita. *P——s* confined himself, used no exercise in the air for three months, eat fully of animal food, and took tonic and nervous medicines.

6th. Therefore it appears, that the interruption to the full action of the lungs, the animal food, and confinement, explain *P——s* apparent approach to scurvy, or the actual existence of a variety of it; and that  
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though the lungs of *Tewson* were equally interrupted, the scurvy or even a disposition to it did not appear, as she was obliged to go out in the air and be employed in active labour, and from her poverty, to live mostly on vegetable matter. Hence an interruption in the action of the lungs (and which is further exemplified in the blue boys), though amounting to the production of a livid countenance and listlessness, will not arrive at, or occasion scurvy, or a state approaching to it, as this requires the additional circumstances of confinement, and a full diet of animal food.

7th. And finally, they point out the efficacy of muriated barytes, nitrous acid, and regimen in diminishing bronchocelous tumours, and in obviating a state of system akin to that of scurvy.

The scurvy on the whole may be said to depend on a stomach in an inactive or torpid state, insusceptible of irritable action, connected with some vitiation of gastric  
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fluid, and on some change from that of health in the fluids of the system, arising chiefly from confinement, a diet of animal food, and the want of recent vegetables; but by a peculiar treatment might probably become a condition of stomach, producing bulimia and Diabetes. On the contrary, in Diabetes we might produce scurvy, or something akin to it, by a rigid continuance of its mode of cure.

#### MAL D'ESTOMAC.

There is a disease existing among negroes in the West Indies, called in the French Islands *Mal D'Estomac*, and which appears to be often of an acute nature, depending on a morbid condition of the stomach, and terminating in dropfical effusion. It has been deemed an incurable disease, and many are the negroes who have died of it. The leading characteristics are, a craving appetite, and a desire of cretaceous substances. The urine is said not to be so scanty as in dropfy,

dropfy. Diffection has shewn an enlargement of the mesenteric glands. No remedies have been found successful. We have however heard of one gentleman who cured the disease by tartarised antimony, given so as to excite nausea and frequent vomiting; and another, who gave relief by vitriolic emetics.

From the accounts we had received of this fatal negro disease while in the West Indies, and from any accounts hitherto given of it, we are induced to offer the subsequent hints with the hope they may lead to a more satisfactory elucidation of its nature, and a more successful management.

#### *Nature of Mal D'Eftomac.*

A craving for food, or a keenness of appetite even to the dying moment is a symptom of the disease.

A febrile state accompanies the morbid condition of the stomach, having a disposition



tion to effusion generally, but more particularly in the chest.

The urine is not scanty.

From these facts we would say, that the disease consists in an increased morbid action of the stomach, with too great a secretion of the gastric fluid, and some change of its quality. But whether that action and state of gastric fluid be of the diabetic nature remains yet to be ascertained.

### *Treatment of Mal D'Estomac.*

As Diabetes was, so has this disease been treated with bitters and strengtheners; however this plan has not been hitherto successful. Emetics have given the only relief; one person said he cured the disease by them, and he has not been generally credited, although advantage was acknowledged to have been derived from them.

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We recommend the use of emetics, a diet of animal food without vegetable matter, and of medicines diminishing the action of the stomach, and for this purpose an infusion of tobacco might be found very effectual.

### ARTHRITIS.

The gout is a disease now very frequent, and which may be said to be incurable: for all that seems to be attempted is palliation during an attack, and much is supposed to be gained if the paroxysms are retarded. The nature and treatment of the Diabetes, by exciting new ideas of disease connected with morbid conditions of the stomach, may lead to a better view of gout in all its forms. In the mean time we observe that the gout, though commonly alledged to be an hereditary disease, yet frequently appears under circumstances which are of themselves sufficient to produce it. Those circumstances fall principally under regimen.

Gout

Gout seldom or never appears in low life ; it is the disease of that class of people who live highly and indulgently.

In gout the stomach is chiefly affected, and such affection precedes and always accompanies it. The nature of this seems not to be uniform. There is a variable appetite, it being sometimes good and even keen, and sometimes anorexial. There is constantly a tendency to acescency ; more generally an acid actually prevails. The urine varies according to the condition of the stomach.

The remedies have been of two kinds. The radical and palliative. The first plan is said to consist in the entire use of milk and vegetable food, with an abstinence from fermented liquors, and spirits ; another in a persevering use of bitters ; and a third, by twelve months use of gum guaiac dissolved in rum. In young subjects, and early attacks of the disease, the dietic plan, as has been alledged, may uniformly cure, should it be persisted in for some years. In more advanced

vanced subjects, and when the disease has been of some duration, a diet principally consisting of animal food, an abstinence from all fermented liquors, the guarded use of spirits, and the occasional exhibition of narcotics, as hepatised ammonia and opium, bid fairer than any other treatment to be successful. Captain Meredith, should he persevere in the regimen recommended to him, will furnish an example how far such a plan may succeed. But when prevention and cure of disease depend solely or principally on regimen, which we may say is generally the case, the prospect of success to disinterested professional skill, we fear is very limited. This however, in place of discouraging, should stimulate men of liberal ideas, to labour in lopping off the machinery of traffic, and in expounding the genuine principles of self-preservation.

The subsequent case is so instructive and important, in the consideration of diseases depending on stomach and bowel affection, that we cannot refrain from inserting it here.

A GENERAL

A GENERAL OFFICER, *aged 70. February 28, 1797.* Had hiccough, a firm pulse of 40 in the minute, and at every tenth pulsation there were three small, quick, and unequal movements. He had no headach or giddinefs, indeed faid he was well, except that the hiccough was troublesome to him. He had taken caftor oil on the 26th, and an opening pill on the 27th, both of which we were told had operated briskly, and that he had paffed lumps. However on the fupposition that the bowels were not thoroughly evacuated, he was directed fome pills with calomel and extract of colocynth, and on examining his pulse before they operated it was found to be 50, with a regular and diftinct intermiffion every fifth pulsation. In the afternoon he had two very offensive ftools, and in one of them fcybalæ; the hiccough had ceafed in the morning before the operation of the medicine, but it returned after drinking at dinner about a pint of wine; and now, feven P. M. was very diftrefling to him. A large dofe of calcined magnesia with æther and ammonia



ammonia was given, and which was directed to be repeated every four hours, unless stools were procured. His pulse was 40, and had a regular and perfect intermission every third pulsation.

*March 1st.*

Had only the hiccough once, and that for a few seconds in the night; had two stools, and one of them very black and offensive. The pulse 40, rather irregular, and it is not quite so firm as yesterday; there is a moist skin. The calomel with the extract of colocynth to be repeated in a larger dose, and also the draughts of magnesia with the æther and ammonia should the hiccough return. He was desired to eat animal food, to avoid wine, and drink a little brandy and water. In the evening his pulse was 62, of a natural fullness, but having irregular intermissions; he has had no hiccough all the day, has had several stools. His is directed to repeat his dose of magnesia at bed-time and to-morrow morning.

*2nd.*

*2nd.*

No return of hiccough; pulse 38, unequal and soft; no headach or uneasiness of the bowels. To continue the draughts of magnesia with twice the quantity of ammonia, to have the same diet, but to take Madeira wine at dinner. In the evening the pulse was 60, but very unequal and irregular; had neither hiccough or stool to-day. The calomel and extract of colocynth to be repeated at bed-time.

*3d.*

In the night had two extremely large and offensive stools; this morning does not feel languid, and his pulse is 64, perfectly regular and equable.

*10th.*

No return of hiccough, and his pulse remains as on the 2nd.

This patient had a similar attack of hiccough about twelve months ago, but it was preceded

preceded by vertigo, and a slight paralysis of one side, which however was so remarkable as to prevent him from walking without assistance, and its effects could be observed on the same side of the face. The stomach and bowels were torpid, and seemed insensible to ipecacuan, and some active cathartics. Eight grains of calomel, and four grains of the antimonial powder, at last procured very offensive and lumpy stools, and the hiccough went off with every appearance of the paralytic attack. The GENERAL has been blind many years from an affection of the eyes, which appear to be *Amaurosis*. His retentive faculties have been lately much impaired; he recollects old stories, but any thing connected with the present moment, is immediately forgotten. Being for sometime past so well in his health, the usual precaution of examining his stools was dropped, and of course he has been allowed to go on too long, without thorough evacuations.

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This as we have already observed, is an instructive case, as it shews the influence of the stomach and bowels on the action of the heart and nervous system, and that affections of these, may produce disease too generally, and we fear fatally attributed to other circumstances. On this subject DR. KIRKLAND's labours are of the greatest importance to rational and successful practice.

#### PHTHISIS PULMONALIS.

In the Phthisis Pulmonalis, or tuberculous consumption (and we confine ourselves to this disease), there are symptoms denoting a resemblance to some of those in the Diabetes Mellitus, as a keenness of, or what is commonly termed a very good appetite, frequent acescency of stomach, thirst, florid tongue and gums, white teeth, red lips, flushing; emaciation; the urine generally clear, and not scanty, being about four pints in 24 hours. In one case where  
Mr.

Mr. *Cruickshank* examined the urine, it yielded much microcosmic salt with very little extractive matter, and from other trials by mere evaporation it appeared uniformly to give the same results.

The cause of the tuberculous pulmonary consumption, and whether it is always connected with the scrophulous constitution, are points by no means satisfactorily ascertained. One thing is certain, that it occurs most frequently in the habit scrophulously disposed. But it appears to me more material, to ascertain the effects of the tuberculous state of lungs on the system when it is formed, whether they can be counteracted, and the state itself changed, at least so far as that the tubercles may remain inactive. That this is an object of the first importance there can be no doubt, the very frequent and general occurrence of the disease, and its fatality by the want of success in the plans of cure sufficiently evince it. There is one difficulty, and it seems to be insur-



mountable. The disease begins so triflingly and insidiously, that no attention is bestowed until the progress is so far advanced, as to render it totally impossible for any means within human sagacity to overcome it. Such a derangement of organic structure is often so completely formed, that nothing less than new lungs would be required. We know, however, that with very little lungs, life may be preserved; but that bit of lung, must be healthful, and equal, to the full performance of its limited function. In the tuberculous lung, there is not a healthful structure to be met with. In this description we speak generally, as there may be more limited tuberculous affections of lungs which constitute the chronic consumption, and sometimes the recoverable one. The other one may be truly stiled the galloping consumption, and which certainly kills.

The nature of the predisposition to the disease, however, though involved in the greatest obscurity, deserves unremitting inquiry,

quiry, and so much knowledge of it may in time be acquired, as to lead to preventive management at least.

The treatment hitherto adopted in tuberculous consumption has uniformly failed. How happy should we feel, in being able to propose a plan as successful as that for Diabetes, or what has been found so for scurvy. But it does not appear to us possible, especially when the insidious manner in which the disease attacks and goes on, and the nature of the organ affected, being rendered incapable of performing its necessary, and unavoidable functions, are considered.

But however clouded may be our prospects, we should still keep on the look out, and persevere.

Surely it is fair, and it is reasonable on examining a disease which has baffled every effort to cure, to inquire particularly what those efforts were, and should they be found to consist of means uniformly the same, and

equally unsuccessful to reject them, and to adopt, or at least to try means entirely the reverse. The justness of such a procedure, will become still more apparent and decisive, should an investigation of the appearances and symptoms of the disease, excite a doubt that the former practice was not rationally founded, and could not be accompanied with success. In this way, we arrived at our successful management in Diabetes, and it will assist us much in our present pursuit.

The ulcerated tuberculous consumption is accompanied by symptoms, denoting increased action of the system. The nature of which, and its tendency, constitutes the object of inquiry, as on a proper view of them depends the chance of falling on the successful treatment.

Emaciation has been observed to precede and accompany Phthisis, and it has been said to have originated from the abuse of vinegar, and four fruits. It often arises during the use of mercury, while its effects remain  
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in the system, or immediately afterwards. It rarely (if at all) appears among those who live chiefly on animal food. It has been observed, that in the consumptive habit, scurvy has not been produced.

During the hectic fever, the cheeks are floridly red, so are the lips, and the tongue appears clean, which with the fauces are of a bright red. The appetite is rather keen, and there is an aced state of stomach.

These circumstances, so far as they go, shew a strong resemblance to those, which accompany the Diabetes Mellitus, and are the opposite to those of scurvy. The state of system marked by keen appetite, red tongue, clear urine, &c. often appear (perhaps uniformly so) before the decided marks of ulceration of lungs have been ascertained. In the dissection of those who die of tuberculous consumption, the mesenteric glands have been always found enlarged. It may be said such enlargement depends on the lung affection, but we alledge the contrary.

We believe that the consumptive predisposition may consist in a certain peculiarity of structure of the lacteal, and probably of the whole lymphatic glands. We had an opportunity of examining a child of seven months, who died of hydrocephalus—the mesenteric glands were found enlarged, and the lungs were uniformly and completely tuberculous, the tubercles were very small and soft, having somewhat the appearance of curdled milk. The father of this child died of tuberculous consumption. It therefore appears to us probable, that the tubercles and enlarged glands may be formed at the same time with the other parts of the body, and only subsequently increase according to the habits of life, regimen, and variations of temperature to which the person may be exposed. In children where the mesenteric glands have been found enlarged, with other marks while alive, denoting the scrophulous habit, an acescent state of stomach has been predominant. Children of such habits are remarkably subject to complaints of the bowels accompanied with green stools.

Tuberculous



Tuberculous consumption in its origin is not as yet understood ; but we maintain that it has from its commencement the condition of system, requiring a light and spare diet of animal food, without vegetables.

If we are right in our conjecture concerning the original peculiarity of structure of the lacteal glands, and the formation of tubercles, the necessity of laying down a plan of life likely to retard, and counteract the growth and progress of the tubercles is apparent. Such in our opinion consists, in the use of animal food, with a very small proportion of vegetable matter, and an abstinence from fermented liquors, especially between the age of 12 and 30, and in the application of flannel to the skin. At the same time engaging in those employments, and pursuits, less likely to expose to variations of temperature.

The nature of the Phthical action, and its tendency on the system, seems to approach to that of Diabetes. This is further  
corroborated

corroborated on examining the common treatment and its effects. In consumption, a milk and vegetable diet with the free use of fruits, has been uniformly recommended and adopted. Frequent blood-letting, and by some frequent emetics have been prescribed. So far as abstinence, blood-letting and emetics tend to diminish the action of the system, the mode of cure hitherto pursued may have been found beneficial. But it must appear that such treatment is very imperfect.

The general principles of the practice in Phthisis would appear to consist, in diminishing the action of the system, in counteracting its peculiar tendency, and thus promoting the healing of the ulcerated tubercle, and any further suppuration.

Blood-letting guardedly employed, emetics, absolute rest and confinement in a small room, having a reduced atmosphere with a temperature ranging from 50 to 60 according to the state of the complaint.

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The occasional introduction of hepatic gas, or hydrocarbonate, the former obtained in the same manner as directed in the preparation of the hepatifed ammonia; and the inhalation of the vapour of æther. The bowels kept soluble; the use of cicuta and camphor given three times a day, washing them down with a wine glassful of water to which two or three drops of the hepatifed ammonia had been added. The diet consisting of milk, and beef and mutton broths only (fermented liquors and vegetable matter being entirely abstained from), constitute the means of treatment meriting a proper trial at the commencement of this very fatal disease.

In the more advanced stages neither blood-letting nor emetics can be safely used. The vitriolic acid, and light preparations of bark have been given with advantage to check the night sweats. The diet should consist of preparations of animal food chiefly, but taken only in such quantities as not  
to

to exert the stomach too much, and thus stimulate the system.

The proposed dietic part of the treatment should be persevered in, until the constitution shews the accession of the opposite state, or that approaching towards scurvy, when a gradual change in the management ought to be adopted. In the advanced stages of Phthisis the opposite tendencies of constitution are not unfrequently produced. We have seen for a few days a keen appetite, clear urine, and a clean red tongue; followed by a loss of appetite, a foul pallid tongue, and turbid urine, after which the other state has as rapidly re-appeared. Each of which conditions of system requires its peculiar treatment. At present we are contented with reciting facts, deferring the theoretical explanation of such varieties of morbid action until the general principles of physiology, and pathology are further illustrated. From what is already well understood with regard to those subjects, we may observe,

observe, that a certain action or state of the system will cease, when either the causes producing it are withdrawn, or the period of their effects is at an end, and on such cessation, an opposite action or state of system takes place. In Phthisis the ordinary state we suppose to be that of hyper-oxygenated action; but should the circumstances producing it be for a very short time withdrawn, or changed, we imagine the de-oxygenated state will occur. The salutary state would consist in the equable, and ordinary quantity of oxygenation; but the local sore, or affection of the lungs has hitherto baffled every attempt, and while it does so, the two morbid states will be liable to recur.

This, with some other diseases affecting the lungs, and external sores, are those chiefly to which the new doctrines of chemistry can be applied pneumatically with any prospect of advantage. But these doctrines can otherwise be very extensively, and in our opinion, very successfully applied by  
means



means of the stomach, and general regimen.

In consumption there is certainly a sympathetic influence subsisting between the lungs and stomach. This is proved by the acid condition of stomach, the goodness, and often the keenness of appetite, with the superabundance of clear urine, containing a great quantity of fusible, or microcosmic salts in nearly a pure state. Therefore it is evident much advantage may be derived from respiring an atmosphere having a diminished proportion of oxygene, or containing hydrocarbonate, or hepatic gas, applied direct- and very frequently to the lungs. Regimen, however, constitutes the point of the most essential importance, as affording the means of permanent benefit.

Though we have made no particular reference, it will be readily perceived what use we have made of Dr. Beddoes' opinion of Pthisis as expressed in his Observations on  
Calculus,

Calculus, Sea Scurvy, &c. published in 1793, and to whom medicine is highly indebted, for his unremitted, and anxious perseverance in the application of the new doctrines of chemistry.

The lungs and skin have been supposed to be the organs conveying oxygene to the system, but more especially the former; the agency of the stomach is however probably more important than either. They all sympathise with one another, any one of them being in a morbid state, the others in a certain manner partake, at least they are not in a healthy condition.

Dr. Beddoes, though he leans strongly to the operation and agency of the lungs, yet resolves to attend to whatever is likely to act in any manner chemically on the system. Thus he merits complete patronage, and his labours we have no doubt will materially improve medical science.

HIS

HIS *Considerations on the Medicinal Powers*, and the *Production of Fætitious Airs*, in 5 parts; the MEDICAL EXTRACTS in 3 volumes; DR. TROTTER'S two publications on *Scurvy*; and MR. TOWNSEND'S *Guide to Health*, contain many facts, proving not only advantage to have been derived from respiring particular airs, but that the most permanent, and extensive benefits have been obtained by diet and medicines, exhibited by the stomach on the new principles of chemistry. The agency of the lungs in hyper-oxygenating, and de-oxygenating the system, appears to us to have engaged the principal attention, while that of the stomach (except by Dr. Trotter in scurvy) has been either nearly overlooked, or directly combated. We have ventured to maintain, that by the stomach these conditions of the system can only be fully produced, and permanently supported. We admit, however, that the nature of the respirable air, the degree and frequency of the lungs' action, must form part of the plan of management by  
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the stomach to render the whole complete. The single fact recorded of MR. SPALDING strongly supports our opinion. He observed that when he had eaten animal food, or drank fermented liquors, he consumed the air in the diving bell much faster than when he lived upon vegetable food, and only drank water. Many repeated trials had so convinced him of this, that he constantly abstained from the former diet whilst engaged in diving. Therefore a diet of animal food may be supposed to form such a chyle and blood, as to require more oxygene to preserve the system in its necessary state of oxygenation; and where such a diet is taken, health is only preserved by constant employment in the open air. The reverse of this takes place, by a vegetable diet. Of this, P——s' and Tewson's cases afford illustration. Our opinion receives additional strength from Dr. Trotter's Observations on Scurvy; from the effects of mercury, nitrous, oxygenated muriatic, and citric acids in fever, scurvy, and lues venerea; from the use of acids in obviating the effects of opium,

and ardent spirits; and from the treatment of the Diabetes Mellitus. The exhibition of the nitrous, oxygenated muriatic, citric acids, and oxygenated muriate of potash in the venereal disease as related by Mr. *Cruickshank*, by which the disease was not only removed, but every mark of hyper-oxygenation of the system produced, we hold to be particularly conclusive. Indeed the warmest advocates for the power of the lungs over the system in de-oxygenating and hyper-oxygenating it according to the nature of the air respired, acknowledge not only the sympathetic effect with the stomach, but also, that in proportion to the quantity of food received into the stomach abounding with hydrogen, the system covets oxygen, taking up a greater quantity of it by respiration from the atmospheric air. Therefore, when food of an opposite quality is taken, we must equally suppose, that the system will covet hydrogen, or at least, it will not solicit oxygen, on the contrary will part with what superabounds, in order to preserve the healthful oxygenated balance. Thus, under certain



tain circumstances of predisposition these foods, with exercise, or confinement respectively persevered in, we apprehend must produce the two opposite states of system, and lay the foundation of two different morbid affections. On this subject see MR. TOWNSEND'S *Guide to Health*, particularly in the 2nd volume on emaciation, and obesity.

The pneumatic application of the new chemical doctrine, as has been just observed, might probably be solely confined to lung affections, and to external sores; but being of a delicate exhibition, it is less suited for common and general practice, even in these cases, than the manner by diet, suitable medicine, and general regimen. We may, however, except external sores, where the application can be very readily made, and without any serious risk. The confinement in Diabetes, and the exercise in scurvy when admissible, relate to the supposed influence of the lungs, and which are necessary as the lungs constitute part of the powers employ-

ed in assimilation. Of course their operation should fall within the view of treatment.

Scurvy and Diabetes illustrate much, and they shew that by the stomach and general regimen, two opposite diseases, depending on contrary states of system, may be removed. The one being cured by what abstracts, and does not impart oxygene, the other by what imparts, and does not abstract it. Though we believe there may be substances which render the system more susceptible of being hyper-oxygenated, and de-oxygenated, by some sympathetic influence, or co-operation of stomach, skin, and lungs. The frequent and sudden changes we have seen the constitution take on, as apparently containing too much, or too little oxygene, can only be explained in some such way. Morbid poisons of every kind seem to act in producing the state of a part, or of the whole system which admits it to lose readily its oxygene. During the general action of contagion, or morbid poison, the constitution

tion becomes inirritable, and even torpid, and has the appearance of de-oxygenation. As recovery advances there comes on an excess of sensibility, a keenness of appetite, a more than ordinary discharge of clear urine, and in this state stimuli are injurious, which marks hyper-oxygenation. We lately met with a case of typhus which run on to the twenty fifth day. Few remedies had been used. On the approach of convalescence, the face, lips, and tongue, which during the fever were of a dull and rather purple hue, assumed a florid colour. We have since met with two other cases of the same fever, where we think in the early stage of the disease some advantage was obtained from the nitrous acid.

May not mercury, lately found so beneficial in fever by our friend DR. CHISHOLM, and others, produce its effects rather by forwarding the irritable state in giving the susceptibility to the constitution, necessary to its acquiring oxygene, than by any quantity

of oxygene it may have actually imparted? Mercury, however, is said to act by exciting new motions and effects in the system, and in this way overcoming the original disease. The nitrous and citric acids have not been fully tried in fever. There is now, however, a prospect of their soon being so, as on this subject we have written to *Dr. Chisholm*, who has an extensive range of practice by his appointment of *Inspector of Ordnance Hospitals in the West Indies*; and for this purpose a quantity of nitrous acid has been sent out, on our recommendation, by the BOARD OF ORDNANCE—of the citric acid there is plenty in the country. We have no doubt he will try both acids in the fever, and those affections in which he has given mercury with success. We are happy in having by our recommendation to *Dr. Chisholm* unknowingly co-operated with the wishes of *Dr. Currie of Liverpool*, who has informed us, that he had made application to SIR JOSEPH BANKS, requesting him to solicit Government, to send out nitrous acid

acid to the West Indies, to be used in the fever, which has proved so fatal to the soldier and sailor.

In further corroboration of the preceding remarks, it may be observed, that in childhood there is a very instinctive inclination, or desire for fruit, and even that most unripe, marking a state of stomach as in scurvy, desirous of acquiring oxygene. In pregnancy, another natural state, the stomach generally inclines to animal food, narcotics are often indicated, which relieve, and thus is pointed out a desire for de-oxygenation. However different this opinion of the pregnant state may appear to what has been entertained, it agrees with our experience. The suspension of Phthisis during pregnancy may be owing to the determination excited from the lungs by the uterine condition. It may be a species of conversion, pregnancy being considered as a disease of necessity. We very lately had occasion to examine some urine passed during an hysterical attack in the pregnant state, it was as colour-

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less as water, had scarcely any smell, the taste exceedingly pungent, and it was so acrid as to excoriate the inside of the thighs. A small portion was evaporated, but being obliged to remove it from the fire before the process was quite finished, we were surprised to find a complete crystallization had taken place when it was cool, and of a salt which did not attract in two days moisture from the atmosphere. Mr. *Cruickshank* compared it with the microcosmic salt of the urine of a tuberculous case of consumption in a soldier of artillery. The soldier's urine gave a much larger proportion of pure microcosmic salt than what can be obtained from healthy urine; the hysterical urine produced the same in quantity and purity, and both excoriated the parts in passing. But the nature of the salts were found somewhat different. A little of the salt of the soldier's urine was thrown on a red hot iron, and it melted readily, while those of the hysterical urine only in part, a considerable portion decrepitating, owing to a larger proportion of common salt. By re-agents  
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it appeared the former contained more phosphoric salts, and that the latter consisted principally of the muriates of soda and ammonia.

Advanced age also exhibits a natural condition where vegetable food, and of the animal kind only, milk and eggs, with or without wine according to circumstances, afford the most probable means of preserving the remainder of life in tolerable health.

An acidity of stomach, a bright red tongue, generally or partially, white teeth, clear straw-coloured urine, having no unpleasant smell, and not scanty, especially when these appear in an emaciated or spare habit, serve to mark the hyper-oxygenated system, or to point out the necessity of a diet of animal food; and alkalies, and hepatised ammonia, as medicines.

A stomach with no sensible acidity, a putrid, or disagreeable animal taste and eructation; a pallid tongue; foul, dark coloured  
ed

ed teeth ; a scantiness of urine, and that of a high colour and offensive smell, especially occurring in a corpulent or full habit, distinguish the de-oxygenated system, and denote the use of vegetable diet, and acids.

The importance of ascertaining these states with accuracy is conspicuous, and we have no doubt in time it will be accomplished. However, in order to hasten and actually obtain its completion, it should form the chief concern of the medical observer, as much observation and fact will be further required. On the discernment of these states depends the rational and successful treatment of nearly, if not the whole class of general diseases.

Whether these states depend on hyper-oxygenation, or de-oxygenation, is not so important or essential as to know, that to whatever they may be owing, their exchange into the healthful, can only be accomplished by the regimen and medicines we have described as suitable to the respective

tive conditions. This we alledge to be the fact, and time will unfold the theoretical explanation more correctly and determinedly.

Besides, Diabetes and Scurvy, and the range of diseases between them, depending on stomach affection, as illustrating the application of the new doctrines of chemistry in their explanation and treatment, we may add to the list the following :

1st. LUES VENEREA—This has been already mentioned.

2ndly. ERUPTIVE DISEASES FROM CONTAGION, as *small pox*, in which vegetable diet, acids, and even mercury have been found most suitable.

3dly. DISEASES FROM GENERAL CONTAGION, as *ship fever*, in which fresh air, vegetable diet, acids, mercury, wine, have been found to be the remedies.

4thly.

4thly. INFLAMMATORY DISEASES; which are most commonly the offspring of cold, and variation of temperature, requiring confined air, blood-letting, emetics, purgatives, narcotics, and very weak beef or mutton tea.

A review in this way, furnishes strong evidence in favour of our opinion, that the system may be in its morbid conditions successfully changed, and healthy states of it produced, by means of regimen, and medicines acting directly on the stomach. An attention to which must therefore be of the most essential importance, in our future medical progress towards improvement.

The agents for hyper-oxygenating, and de-oxygenating the system, may be divided into two classes.

1st. Those which immediately act in giving, and abstracting oxygene.

2nd.



2nd. Those which render the system more disposed to receive, and lose oxygene.

The list of these agents will be gradually augmented.

OF THE FIRST CLASS; we may already notice,

1. THESE IMPARTING OXYGENE.

*Exercise and vegetable diet.*

*Citric acid.*

*Nitrous acid.*

*Oxygenated muriatic acid.*

————— *muriate of potash.*

*The calces of mercury, and of some of the other metals.*

2. THESE ABSTRACTING OXYGENE.

*Confinement, and animal food.*

*Hepatised ammonia.*

*Kali sulphuratum.*

*See Dr. Garnet's Letter to Dr. Beddoes.*

OF

OF THE SECOND CLASS; we may point out,

1st. *Mercury ; its various preparations.*

*Iron; its calces, &c.*

*Muriated barytes* (this medicine excites appetite, increases the flow of urine, and may some how or other give the disposition to oxygenation. It does not probably impart oxygene, but its effects appear to us to correspond with these producing the oxygenated state.)

2nd. *Camphor. Ether. Alcohol. Narcotics.*

IN THIS GENERAL VIEW OF THE NATURE AND TREATMENT OF THE DIABETES MELLITUS, an outline has been introduced of an arrangement and explanation of diseases, as forming a connection with it and SCURVY. But it is readily confessed, that such may have been hastily announced. However, we have marked the grounds on which any opinion, or conjecture has been founded. We shall in future cautiously observe the same line of conduct we have pursued in the investigation of Diabetes, and nothing shall be advanced by us unless it has at least a degree of plausible support.

support. For the present, therefore, we remain much gratified in its having fallen to our share to have furnished an opposite to scurvy.

We cannot dismiss the subject without hinting, that in nosological arrangements of diseases, the causes producing them form no part of the diagnostic, the systematic principle being confined to symptoms, and actual appearances. But these vary so much as to exhibit endless varieties, of apparently dissimilar diseases, while in fact they remain essentially the same, and thus the nosological table may be boundless. Whereas the causes of disease are few, simple, and uniform, invariably producing the respective disease, and differing only by peculiarity of constitution. Therefore a new and useful medical system might be constructed on the causes of disease. These may probably be thus arranged.

1st. *Diseases from mechanical violence, and external injuries.*

2nd.

- 2nd. *Diseases from variations of temperature, with, or without, moisture.*
- 3d. *Diseases from habits of life, comprehending regimen.*
- 4th. *Diseases from marsh vapour, contagion, morbid poisons, animal poisons.*

Except the first class, all the others require a predisposition, either hereditary, artificial, or accidental; these causes excite, or produce certain powers, or efforts in the system, to counteract, and entirely eradicate the tendency of the respective operations, and such constitute the vis medicatrix naturæ. Should it be hereafter proved, that diseases admit only of one distinct general state of system, and which must be either that of hyper-oxygenation, or de-oxygenation, successful distinctions, and practice, will become rationally explained, and established.

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2nd. *Diseases from the action of the*  
*external world, as climate, season, &c.*

3rd. *Diseases from habits of life, as*  
*overeating, &c.*

4th. *Diseases from weak or diseased*  
*organs, as the lungs, &c.*

Through the first class, all the others re-  
 ceive a predisposition; either hereditary, ac-  
 tual, or accidental; these causes excite,  
 or produce certain powers or efforts in the  
 system, to counteract, and entirely eradicate  
 the tendency of the respective operations, and  
 thus, in a measure, via medicatrix nature.  
 Second, it has been proved, that diseases  
 which only arise from a general state of  
 nature, and which ought to exhibit their  
 symptoms, as a result of the system, find  
 their explanation, and perhaps, become  
 naturally explained, and eradicated.

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